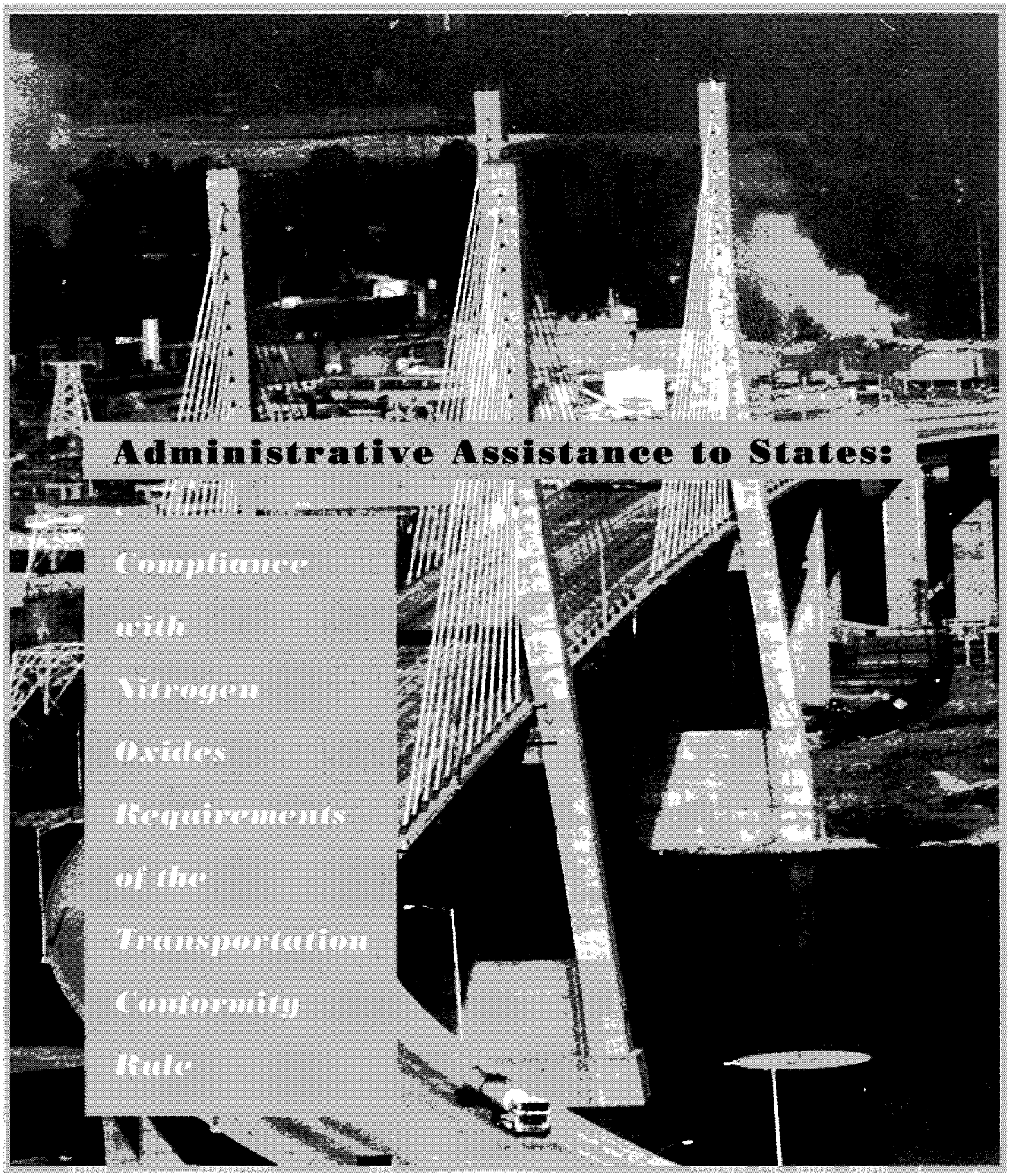

Administrative Assistance to States:

Compliance with Nitrogen Oxides Requirements of the Transportation Conformity Rule

U.S. Department of Transportation
Federal Highway Administration

U.S. Department of Transportation
Federal Transit Administration

Notice

The contents of this report reflect the views of the authors, who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official policy of the Department of Transportation.

This report does not constitute a standard, specification or regulation.

AUG - 8 1995

The Honorable Albert Gore, Jr.
President of the Senate
Washington, D.C. 20510

Dear Mr. President:

Enclosed is the Department of Transportation (DOT) and the Environmental Protection Agency (EPA) joint report titled "Administrative Assistance to the States: Compliance with Nitrogen Oxides Requirements of the Transportation Conformity Rule." This report was requested by the Appropriations Committee reports on DOT and Related Agencies Appropriations Bill, 1995; and EPA Appropriations Bill, 1995. The Committee has requested an assessment of the steps taken by the agencies to assist States in complying with nitrogen oxides requirements in the Clean Air Act transportation conformity rule, while protecting their ability to go forward with transportation projects.

I hope this information will be helpful to you.

Sincerely,

Federico Peña
Secretary
Department of Transportation

Carol M. Browner
Administrator
Environmental Protection Agency

Enclosure

AUG - 8 1995

The Honorable Newt Gingrich
Speaker of the House of
Representatives
Washington, D.C. 20515

Dear Mr. Speaker:

Enclosed is the Department of Transportation (DOT) and the Environmental Protection Agency (EPA) joint report titled "Administrative Assistance to the States: Compliance with Nitrogen Oxides Requirements of the Transportation Conformity Rule." This report was requested by the Appropriations Committee reports on DOT and Related Agencies Appropriations Bill, 1995; and EPA Appropriations Bill, 1995. The Committee has requested an assessment of the steps taken by the agencies to assist States in complying with nitrogen oxides requirements in the Clean Air Act transportation conformity rule, while protecting their ability to go forward with transportation projects.

I hope this information will be helpful to you.

Sincerely,

Federico Peña
Secretary
Department of Transportation

Carol M. Browner
Administrator
Environmental Protection Agency

Enclosure

ADMINISTRATIVE ASSISTANCE TO STATES:

COMPLIANCE WITH NITROGEN OXIDES REQUIREMENTS OF THE TRANSPORTATION CONFORMITY RULE

A Joint Report from the United States
Department of Transportation and
Environmental Protection Agency

May 1995

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I. INTRODUCTION

Legislative Requirements

In the report accompanying the FY 1995 Appropriations Bills for the DOT and EPA, the House Appropriations Committee directed the U.S. DOT and EPA to develop a report on the administrative remedies being offered to the States as they grapple with nitrogen oxides (NOx) requirements of the transportation conformity rule. This report provides background and assessment of the steps U.S. DOT and EPA have taken to assist States in complying with the NOx requirements and to avoid unnecessary obstacles to transportation projects.

NOx--A Major Pollutant

NOx is a category of pollutants produced during fuel combustion. In nonattainment areas, the two major contributors of NOx are mobile sources and fossil-fueled electric power plants. NOx is partially responsible for the brownish color of the sky where smog develops, and it can irritate the lungs and lower resistance to respiratory infection. In children, NOx has been linked to general respiratory problems, such as coughing and sore throat.

NOx is particularly significant as a precursor to ozone. Atmospheric ozone is produced from the chemical reaction of NOx and volatile organic compounds (VOCs) in the presence of sunlight. Over 90 metropolitan areas are in violation of the national ambient air quality standards (NAAQS) for ozone. Breathing ozone in relatively low amounts can cause chest pain, coughing, nausea, throat irritation, and congestion. It may also worsen existing conditions such as bronchitis, heart disease, emphysema, and asthma.

The nature of the chemical reaction in ozone formation is complex, and the relationship between VOCs and NOx during the formation of ozone is nonlinear. Past scientific studies and air pollution control programs have emphasized VOC reductions as the primary approach to ozone control. However, recent studies have increased the focus on the role of NOx reductions in lowering ozone concentrations. For example, a 1992 report by the National Research Council found that reducing NOx may be the only way to reduce ozone pollution in areas with significant biogenic sources of VOCs (see National Research Council, "Rethinking the Ozone Problem in Urban and Regional Air Pollution," pages 351-377).

NOx includes nitric oxide (NO) and nitrogen dioxide (NO_2). NO_2 is a brownish, highly reactive gas that is present in the atmosphere. EPA has established a NAAQS for NO_2 specifically, to address concerns separate from the role of NOx as an important precursor to pollutants such as ozone and particulate matter. The NO_2 standard is being attained in all areas of the country. As a result, efforts have been shifting toward NOx in general.

NOx produces other important environmental effects in addition to its role in ozone formation. In some Western areas of the United States, NOx is an important precursor of particulate matter, for which EPA has also established a NAAQS. NOx is an important precursor of acid rain as well. Furthermore, atmospheric deposition of NOx is a significant contributor to ecosystem effects, including algal blooms in certain estuaries such as the Chesapeake Bay.

NOx and Transportation

Emissions of NOx vary significantly with speed and with the nature of the mobile source. Diesel powered vehicles, such as buses and heavy-duty trucks, are much greater sources of the pollutant than are standard passenger automobiles. In addition, as with most pollutants resulting from internal combustion engines, older vehicles produce higher NOx emissions, as these vehicles do not feature advanced emissions control systems, such as catalytic converter technology.

The vehicle speed issue surrounding NOx represents much of the problem in dealing with this ozone precursor. Many traditional approaches in dealing with ozone pollution have centered on controlling hydrocarbon emissions rather than NOx emissions or assuming that the emissions benefits derived from hydrocarbon-directed measures would carry over to other pollutants. However, it has become evident that control measures designed to increase speed and mitigate hydrocarbons actually aggravate the NOx problem in selected vehicle speed ranges. Some traditional transportation control measures (TCMs) reduce both ozone precursors by eliminating vehicle trips or vehicle miles travelled (VMT). Section 108(f) of the Clean Air Act lists TCMs which affect both trips taken and miles travelled.

Advances in technology have contributed to major reductions in both hydrocarbons and NOx emissions from mobile sources. Greater strides in reducing NOx will likely result from new vehicle emissions control technology, use of reformulated gasoline, and more effective inspection and maintenance programs. However, these technology-derived solutions must be applied to both the "action" and the "baseline" scenarios when determining the conformity of transportation plans and programs. Hence, while their value to clean air goals is paramount, they represent

little value to regional planners trying to craft transportation plans and programs that contribute to emissions reductions.

Regulatory Requirements

The Transportation Conformity Rule was published in the Federal Register on November 24, 1993. The proposed rule did not call for NOx reductions in ozone nonattainment areas during the interim period (defined as the period from the issuance of the regulation to submission of a State implementation plan which includes an emissions budget). However, EPA received public comment in favor of adding the NOx requirement, citing such a reduction as a Clean Air Act mandate.

In agreement with the testimony, EPA added a requirement to the final rule which calls for a reduction in NOx emissions during the interim period. This reduction is to be demonstrated by the "action/baseline" (i.e., build/no-build) test in ozone nonattainment areas. The test must be satisfied for both hydrocarbons and NOx. As directed in sections 51.436 and 51.438 of the conformity rule, regional emissions of hydrocarbons and NOx predicted in the "action" scenario must be less than those predicted from the "baseline." Essentially, the rule directs regional organizations to demonstrate that implementing or building their plans and/or programs--the "action" scenario--will improve air quality over the existing transportation network without benefit of projects from the plan and program. This improvement must result in decreased levels of both hydrocarbons and NOx. Since the build/no-build test addresses the entire package of proposed transportation improvements, individual endeavors that increase NOx are permitted provided they are offset by other projects which yield an emissions benefit.

The EPA and DOT developed the action/baseline test to address the requirement in Clean Air Act section 176(3)(A)(iii) for plans and programs to "contribute to annual emissions reductions" during the period before state air quality planning is complete. Once EPA has approved a state plan which demonstrates how the ozone standard will be attained, the action/baseline test is no longer required.

Confronting the Problem

To ease the difficulties and clear some of the technical confusion surrounding this issue, the U.S. DOT developed a series of guidance memoranda aimed at providing State and regional organizations a broadened level of understanding and some thoughts as to workable solutions in dealing with NOx.

In addition to the DOT guidance, EPA has also developed guidance on the application process for waiver of the transportation

conformity rule's NOx requirements. For those problems that are so severe and complex that guidance and waiver efforts are not appropriate, the U.S. DOT has put together technical teams of modelling experts in both transportation demand forecasting and air quality analysis. These teams have made several field trips, emphasizing technical assistance in identifying and confronting NOx emissions.

On February 8, 1995, EPA published an interim final rulemaking in the Federal Register allowing states more time to submit complete SIPs before negative conformity consequences apply. Both EPA and DOT will continue to work with state and local governments to identify and address issues regarding the implementation of the conformity rule.

II. ADMINISTRATIVE REMEDIES

U.S. DOT Guidance Memoranda

In a joint effort, Federal Highway Administration and Federal Transit Administration issued a pair of guidance documents aimed at identifying the more critical issues surrounding NOx emissions, but more importantly, at offering some workable practical solutions in dealing with these issues (see Appendices A and B). Transportation strategies ranged from project-level approaches to packages that effected changes on programs and plans. The guidance also stepped away from physical changes to transportation networks or operations and discussed analytical modifications to assure a more accurate assessment of regional needs and, hence, better focused plans and programs. The following summaries indicate the types of strategies discussed in the FHWA/FTA memoranda:

Transportation Control

Transportation Demand Measures, or TDM, have been developed that reduce vehicle trips, VMT and hence, reduce overall mobile emissions. These approaches may include employer-based endeavors such as staggered work hours or more comprehensive ridesharing programs.

Transportation System Measures, or TSM, involve changes to the transportation network itself and may involve congestion mitigation or management projects designed to smooth traffic flows within well defined speed ranges. Projects may include traffic signal systemization. Similarly, **speed limit enforcement** programs directed at these NOx-sensitive speed ranges have also been included in the guidance.

Transit improvements can be used to help reduce VMT and vehicle trips as well. New or expanded service or modification of the fare structure have been offered to attract travelers to those modes of public transportation.

Older vehicle replacement can also produce some emissions reduction, as newer automobiles benefit from the technology gains of the past 20 years.

Modelling

It is critical to assess plans and programs with the greatest degree of technical accuracy possible. The FHWA/FTA guidance recommends that areas experiencing difficulties with NOx conduct a comprehensive review of transportation demand and air quality modelling capabilities. In addition, MPOs should assure that all regional transportation measures traditionally left out of the analytical process, such as system management and transit, are now added to the process and those activities requiring off-model analysis be included as well.

Field Visits and Recommendations

The FHWA visited several State transportation organizations in spring 1994. With the emphasis on technical modelling, such as transportation demand forecasting, FHWA analysts were able to provide some pertinent suggestions that reflected much of the information found in the guidance documents discussed. Visits included:

Ohio

On a March trip to the Ohio DOT, the critical issue of freeway speed estimation was discussed in great detail. Ohio DOT had been using older speed vs. volume/capacity relationships based on the 1985 **Highway Capacity Manual**. The 1994 update of the manual supports the view that vehicle speed is virtually constant with all levels of service until the traffic stream reaches the congested level. Hence, many traffic flow improvement projects may not be resulting in the speed increases traditionally thought and, in turn, may not add to NOx due to the perceived climb in speed from build over no-build.

In a similar theme, NOx emissions on freeways during late night operations were discovered to be high due to the prevalence of heavy-duty diesel trucks. One of the solutions Ohio DOT considered to counter this problem was a speed limit enforcement campaign targeted at highways posted at 55 mph and during the extreme late night.

Delaware

Technical analysts in both transportation demand forecasting and air quality also visited Delaware to discuss NOx problems. Part of the Philadelphia severe nonattainment area, Wilmington was having great difficulty in passing conformity, largely due to technical problems.

The FHWA team found that transit projects were not adequately credited in the transportation model. In addition, similar to the Ohio situation, speeds were not being accurately assessed. Replacement of daily speed assumptions with peak and off-peak measures produced more accurate results and substantially reduced NOx in the "action" scenario. Since the deficit resulting from the action/baseline comparison was minimal, rectifying these two issues accounted for the improvements needed to pass NOx, while maintaining the improvements already registered for VOC.

Waivers From NOx Requirements

The transportation conformity rule provides for an exemption to its NOx requirements, including the NOx action/baseline test, if the EPA Administrator determines under section 182(f) of the Clean Air Act that additional reductions of NOx would not contribute to attainment.[1,2] On June 17, 1994, EPA released a general preamble regarding how the agency intends to process such waiver requests for all ozone nonattainment areas, including nonclassifiable nonattainment areas, located outside the Ozone Transport Region (see Appendix C). The preamble states EPA's policy that an area seeking a waiver may meet the section 182(f) test by submitting air quality monitoring data for the last 3 years showing that the area has attained the ozone standard. By demonstrating that attainment is already being achieved, EPA feels that additional reductions in NOx would not contribute to attainment. However, waivers based on air quality monitoring data will be contingent upon the monitoring data continuing to demonstrate attainment.

Alternatively, an area may submit a waiver request from the transportation conformity rule's NOx requirements by submitting photochemical modelling demonstrating that additional NOx reductions will not contribute to attainment. The process for submitting such waiver requests and the criteria used to evaluate them are explained in the December 1993 EPA document "Guidelines for Determining the Applicability of Nitrogen Oxides Requirements Under Section 182(f)" and in a May 27, 1994, memo from John S. Seitz, Director of the Office of Air Quality Planning and Standards, to Regional Air Division Directors, titled "Section 182(f) NOx Exemptions--Revised Process and Criteria." (Appendix D).

The preamble also stated that EPA will use a full rulemaking process, including the opportunity for public comment, in order to grant or deny a waiver. The Administrative Procedures Act requires notice-and-comment rulemaking when a Federal agency's actions involve not just factual, but also policy and legal considerations that will apply as a general matter, and thus is legislative in nature. Actual authority to grant or deny a petition for a NOx transportation conformity rule waiver is delegated to the appropriate EPA regional administrator.

The Agency has received a number of waiver requests based either on the submission of 3 years of air quality monitoring data or on photochemical grid modelling demonstrating attainment of the ozone standard. A complete list of areas which to date have requested waivers is provided in Appendix E. The EPA is already acting on several waiver requests. The EPA initially attempted to process most of these actions under an approach known as direct final rulemaking. Under this procedure, final approval of a waiver request would become effective immediately after a limited, specified time period during which notice is provided in the Federal Register, unless adverse or critical comments on the action are received prior to the effective date. In the event such critical comments are received, the action is converted to a proposal, and EPA must respond to submitted comments and take final action in a subsequent Federal Register notice. However, on August 24, 1994, around the time these first exemption requests were being published, the Natural Resources Defense Council (NRDC) and the Environmental Defense Fund (EDF) jointly submitted a letter to EPA objecting to several key aspects of the Agency's NOx exemption policy, including the use of direct final rulemaking. The NRDC and EDF asked that these comments be included in the rulemaking docket for each specific section 182(f) NOx waiver request. Consequently, those exemption determinations initially published as direct final actions were withdrawn and reissued as proposals. Some of these rulemakings are briefly described below.

On August 29, 1994, EPA issued a proposed rule to conditionally approve NOx exemptions for the Dallas/Fort Worth and El Paso ozone nonattainment areas based on modelling demonstrating that both areas would attain the NAAQS by the CAA-mandated deadline without implementing the additional NOx reductions required under section 182(f). The proposed exemptions are conditioned upon final EPA approval of the modelling portion of each area's attainment demonstration. Also, as with NOx exemptions based on air quality monitoring data, exemptions based on modelling would last for only as long as subsequent modelling in an area continues to demonstrate attainment without additional NOx reductions. A final approval notice was published in the Federal Register on November 28, 1994.

On September 12, 1994, after withdrawing a previously issued direct final notice, the EPA published a notice proposing approval of a NOx exemption request for the Dayton and Toledo, Ohio ozone nonattainment areas based on 3 years of monitoring data. The final approval notice, including responses to comments, was published in the Federal Register on January 19, 1995.

On September 28, 1994, EPA proposed approving the section 182(f) NOx waiver request submitted by the Bay Area Air Quality Management District for San Francisco.

The Agency has also proposed approvals for Cleveland, Cincinnati, Canton, Columbus, Youngstown, Steubenville, Preble County, and Clinton County, Ohio; and the Lake Michigan area, including Gary, Indiana; Chicago, Illinois; Muskegon, Michigan; and Milwaukee, Wisconsin.

EPA has approved NOx waivers for Victoria, Houston, and Beaumont, Texas; Detroit, Lansing, and Flint, Michigan; New Orleans, Lafayette, and several parishes in Louisiana; and Monterey and San Francisco, California.

Air Quality Videoconference

Education and training has played a critical role in striving for NOx reduction. Much of this effort has been through technical papers and direct responses to both national air quality themes and local issues. In June, 1994, however, this outreach effort took on a new identity as the EPA and U.S. DOT combined forces to sponsor a videoconference on transportation conformity.

The conference was transmitted to more than 75 sites, nationally, and was staffed with air quality experts from EPA, FHWA, and FTA. Accessibility was one of the major benefits of the conference, as many State and regional officials can no longer afford the costs associated with out-of-state travel. Transportation professionals were available to field calls from the many satellite locations. Questions were then funnelled to the appropriate panelists and answered on the air. A fax line was also available for those wishing to forward written queries.

III. CONCLUSION

A complex array of solutions targeted at both technological and policy strategies has been put into place to deal with NOx emissions. The FHWA and FTA have published case study results on some of the approaches that seem to deal well with the problem. The two technical memoranda offered information on new interpretations of the speed and density relationship and its impact on emissions, suggestions on more comprehensive, multi-modal modelling, assessment of traditional TCMs, and the utility of more NOx-specific measures, such as speed-limit enforcement.

In addition to technical assistance, other solutions have been formulated to provide policy options. As outlined in EPA's May, 1994 guidance and June, 1994 Federal Register notice, nonattainment areas outside the ozone transport region displaying 3 years of clean monitoring data are permitted to apply for waivers of the NOx requirements under CA Section 182(f).

Public education and outreach have also been invaluable to the effort. The June videoconference sponsored by all the Federal participants brought the issues to a more accessible level with an opportunity to question the experts with some real time responses forthcoming.

Pollution from NOx continues to be a problem as traditional methods to reduce congestion and improve the efficiency of the transportation system can lead to increases of NOx emissions. To address these issues, the DOT and EPA will continue to offer technical assistance as the need arises.

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[1]Section 182(f) requires States to apply the same emission control requirements that apply under the ozone subpart of Title 1 for major stationary sources of VOC to such sources of NOx as well. Those requirements are reasonably available control technology (RACT) and nonattainment new source review (NSR), which apply in certain ozone nonattainment areas and throughout any ozone transport region. Section 182(f) also provides that application of the NOx requirements may be waived or limited if any one of 3 tests, including the "contribute to attainment" test described above, is met. Certain regulations promulgated by EPA, such as the inspection and maintenance and the general and transportation conformity rules, also reference the section 182(f) exemption provisions as a means for seeking relief from certain of their NOx requirements.

[2]However, it should be noted that during rulemaking on several NOx exemption petitions, several commenters correctly pointed out that the statutory authority for granting waivers from certain NOx transportation conformity requirements is provided by Clean Air Act section 182(b)(1), not 182(f). Accordingly, EPA is amending its rule to change the basis for granting NOx waivers from section 182(f) to 182(b)(1). EPA will also provide additional guidance to affected areas on relevant interpretations of section 182(b)(1), and on the procedural and substantive consequences of the contemplated rule amendment.

Appendix A

U.S. Department of Transportation

Federal Highway Administration

Memorandum

Subject: **INFORMATION:** Conformity and Nitrogen Oxides (NOx)

Date: MAR 10 1994

From: Director, Office of Environment and Planning
Director, Office of Planning

Reply to Attn. of: HEP-40

To: Directors, FHWA Office of Planning and Program Development (Regions 1-7 and 10)
Directors, FHWA Office of Program Development (Regions 8 and 9)
Directors, FTA Office of Program Development (Regions 1-10)

Since issuance of the final rule on transportation conformity in November 1993, reductions in NOx have become a significant issue for many ozone nonattainment areas. We are working with several areas and with the Environmental Protection Agency to explore solutions that contribute to NOx reductions and enable transportation plans, programs, and projects to proceed. In this memo, we want to provide you with an interim report on the situation and potential solutions. Attached to this memo are:

1) Background Data on NOx;

2) Transportation Options to Reduce NOx Emissions;

3) Travel Demand Modelling Considerations on NOx Emissions;

4) Current NOx-Related Conformity Issues;

5) NOx Waivers and Other EPA Actions Affecting NOx Conformity; and

6) List of DOT Contacts for more Information on Particular Aspects of NOx.

We are continuing to provide NOx technical assistance to several areas, both to assist them and to enable us to develop recommendations and strategies for general use. As we learn more

about NOx, we will provide more information to you. In the meantime, please contact us or one of the individuals listed on Attachment 6 for further information or to let us know of any useful insights or experiences in your region.

Samuel L. Zimmerman

Kevin E. Heanue

6 Attachments

cc: Jane Garvey
Tony Kane
Ed Kussy
Reid Alsop
Abbe Marner, FTA
Camille Mittelholtz, OST
Phil Lorang, EPA
Paula Van Lare, EPA
Jon Kessler, EPA
Dave Clawson, AASHTO
Janet Oakley, NARC
Nancy Krueger, STAPPA/ALAPCO
Rich Weaver, APTA
Becky Brady, NCSL
Lydia Conrad, NGA
Joan Glickman, ICMA
Robert Fogel, NACO
Cara Woodsen, NLC
Kevin McCarthy, USCM
Leo Penne, Nevada Office
Mike McGarry, Ohio Office

BACKGROUND DATA ON TRANSPORTATION NO_x EMISSIONS

Overall NO_x Emission Trends

Highway vehicles account for 32% of the 1992 nationwide anthropogenic NO_x emissions[1] (see Figure 1). On a nationwide basis, NO_x emission reductions from highway vehicles have decreased, but they have been offset by increased emissions from stationary sources (see Figure 2). Transportation-related NO_x emission reductions have been primarily obtained in urban areas while the stationary source emission increases are more uniformly distributed between urban and rural areas.

Vehicle Fleet NO_x Emission Factors (based on EPA MOBILE5 model)

NO_x emissions vary significantly with speed; also, heavy duty diesel trucks are much larger sources of NO_x than other vehicles based on a vehicle-by-vehicle comparison. Figure 3 shows a typical fleet-averaged NO_x emission factor speed curve. Separate curves are also shown for light duty gasoline vehicle (car) emission factors and heavy duty diesel truck emission factors. The heavy duty diesel vehicle fraction, which represents 6.1% of the vehicle fleet VMT (MOBILE5a default value), is responsible for about 40-50% of the vehicle NO_x emissions. Speed curves for both diesel trucks (Figure 3) and cars (enlargement shown in Figure 4) are characterized by a U-shaped curve.

Regarding the speed curve for cars, Figure 4, the emission factor decreases with increasing average speed in the low-speed range (below 15 MPH). Thus, at constant VMT, speed improvement measures in extremely congested areas may yield NO_x emission decreases. The speed curve exhibits a minimum at about 15-20 MPH and the emission factors gradually increase with increasing average speed in the mid-speed range. For constant VMT, speed flow improvements in this range generally reduce VOC emissions but increase NO_x emissions. Note that the MOBILE5-series models predict a positive NO_x emissions slope in the mid-speed range while the MOBILE4-series models predicted a negative slope (emissions decrease with increasing average speed) in this range. According to the MOBILE5 model, NO_x emissions increase sharply with increased average speed in the high-speed range (greater than 45-50 MPH). The overall impact of transportation projects on NO_x emissions will depend on the project-induced changes in the VMT distribution among the various speed increments.

---

[1]Off-highway mobile sources contribute 13% of the nationwide NO_x emissions. Trains and off-road diesels (e.g. construction equipment) dominate the emissions from this source category.

Impact of Transportation Projects on Overall NO_x Emissions

Figure 5 shows the NO_x emissions estimated for various analysis years of the Washington, D.C. FY 94 conformity analysis. Over time, significant NO_x reductions are predicted relative to the 1990 base year emissions. Each analysis year would, however, fail the build/nobuild test because the build scenario emissions exceed the nobuild scenario emissions. We have also analyzed FY 94 TIPs and plans from Ohio and observed similar trends. For the few cases we have studied, emission increases for the build scenario are small compared to the overall NO_x emission reductions, yet a conformity determination cannot be made.

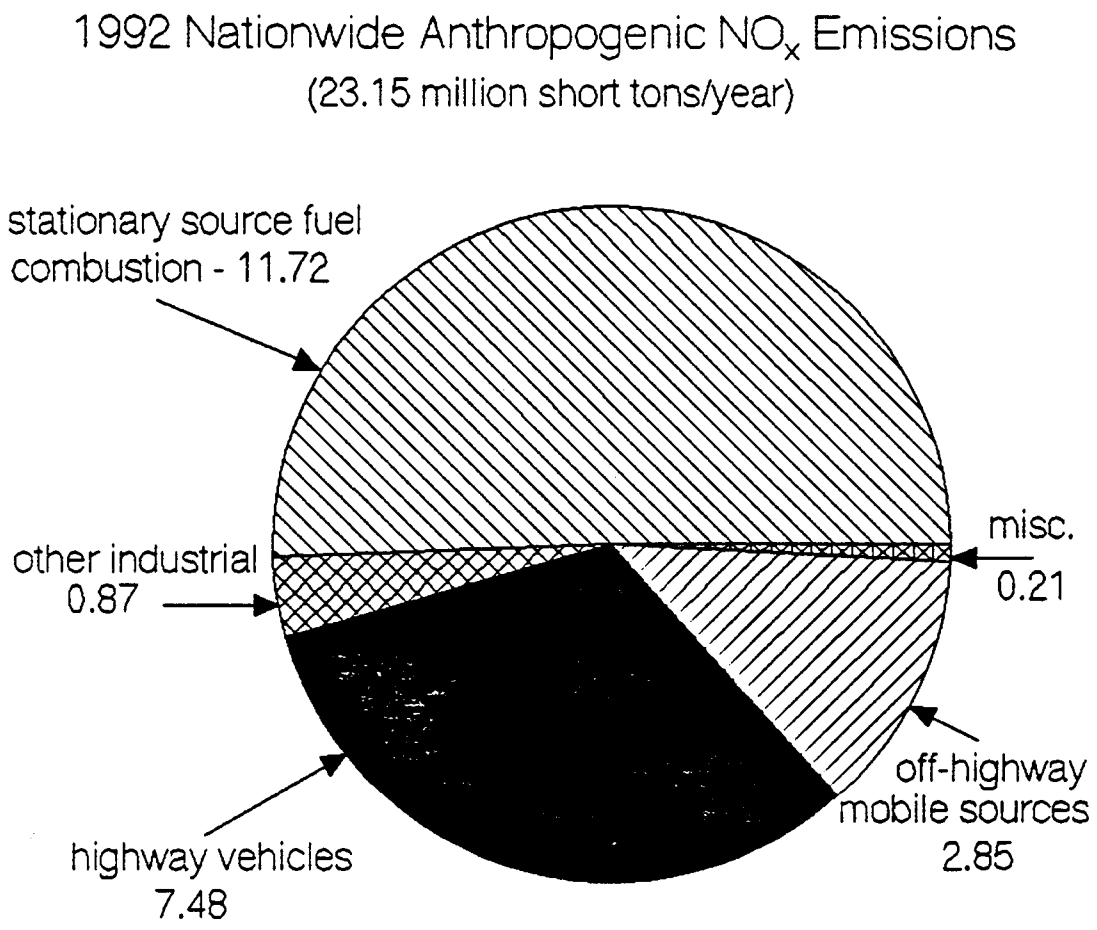


Figure 1. 1992 annual nationwide NO_x emissions in million short tons per year. One short ton = 2000 pounds. Data from: National Air Quality and Emissions Trends Report, 1992, EPA-454/R-93-031, U.S. EPA, October 1993.

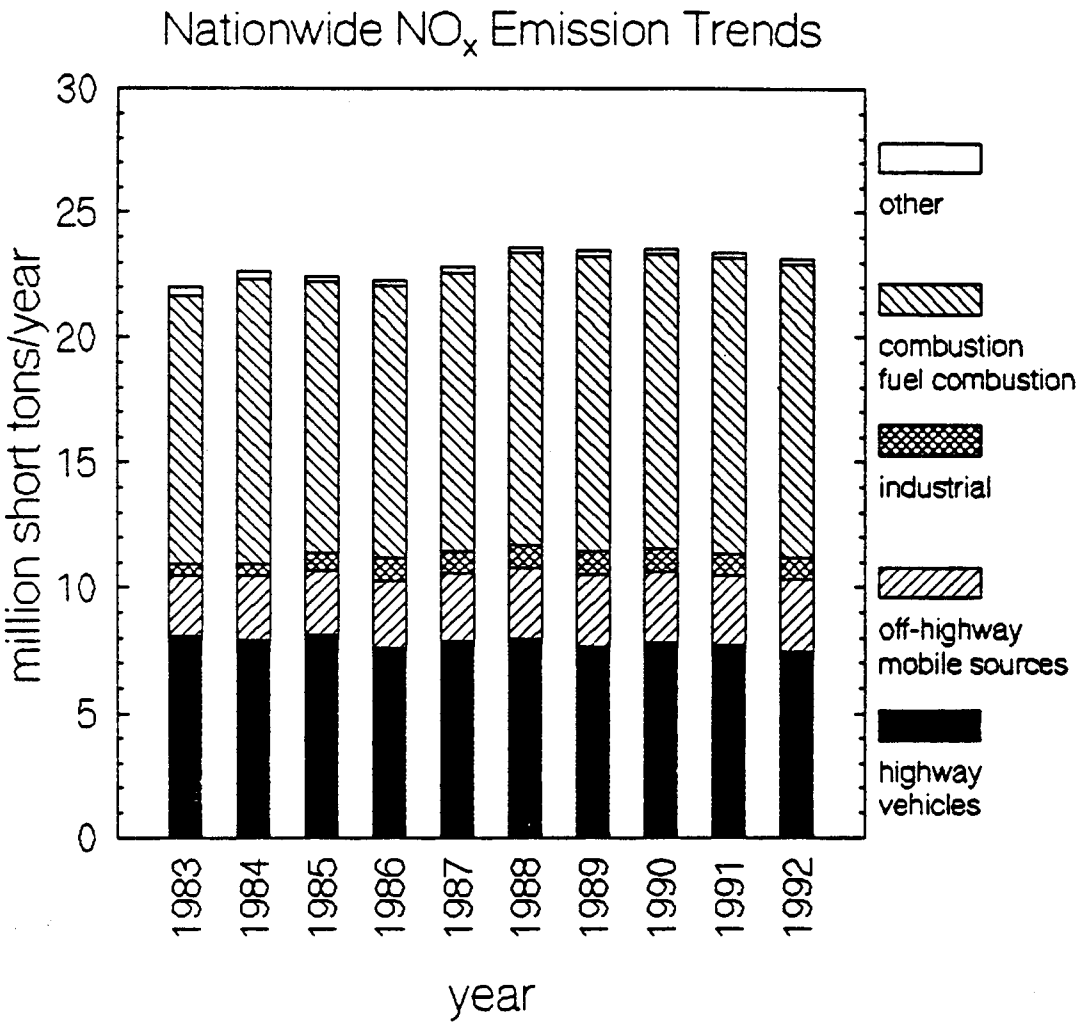


Figure 2. Annual nationwide NO_x emissions for 1983-1992 in million metric tons per year. One short ton = 2000 pounds. Data from: National Air Quality and Emissions Trends Report, 1992, EPA-343/R-93-031, U.S. EPA, October 1993.

NOx Emission Factors vs. Speed

(Year = 1995, Temp = 87.5F, Low Altitude)

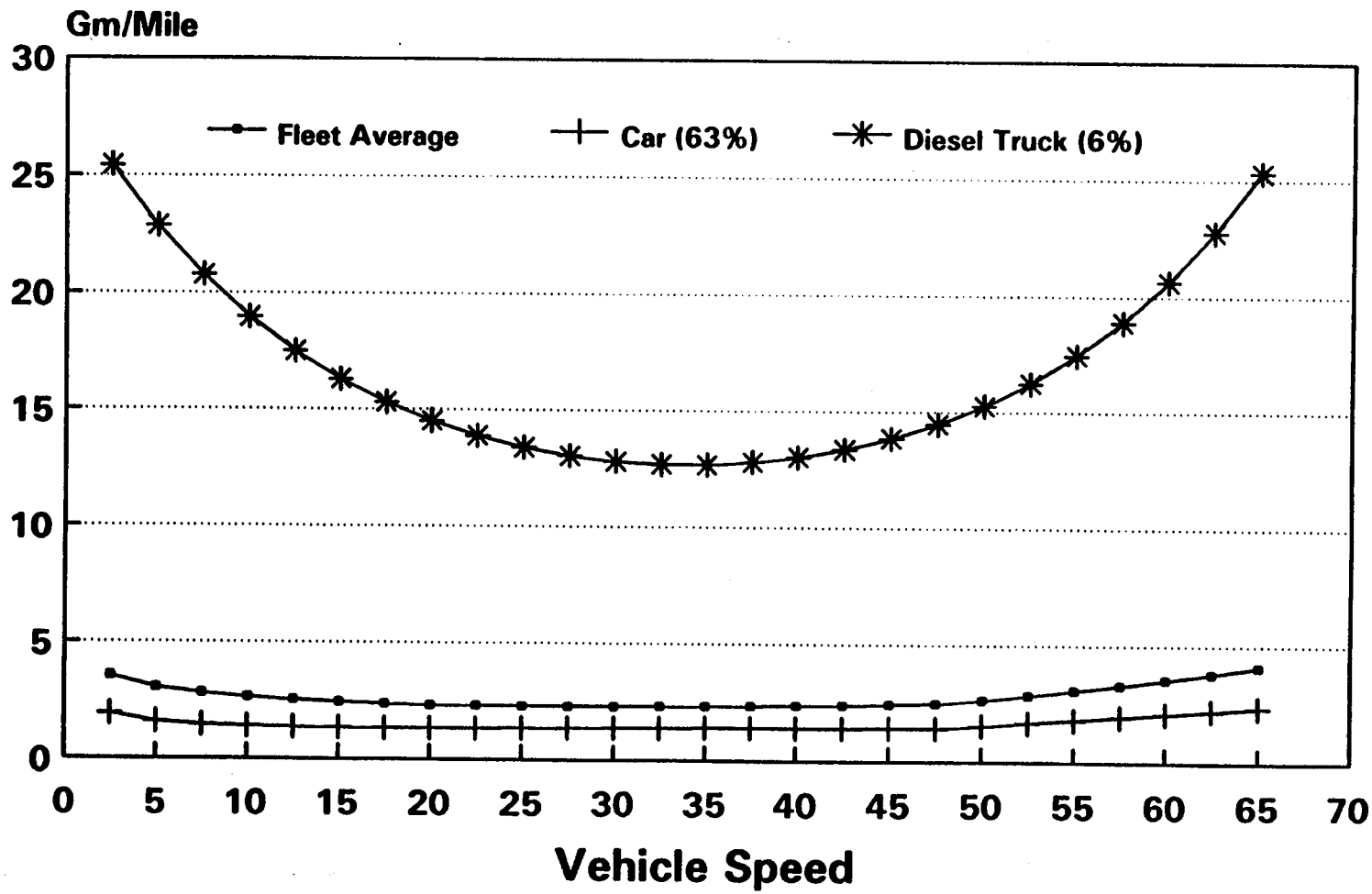


Figure 3. Speed curves for NO_x emission factors. Top curve - heavy duty diesel truck; middle curve - fleet averaged emission factor; and bottom curve - light duty passenger vehicle.

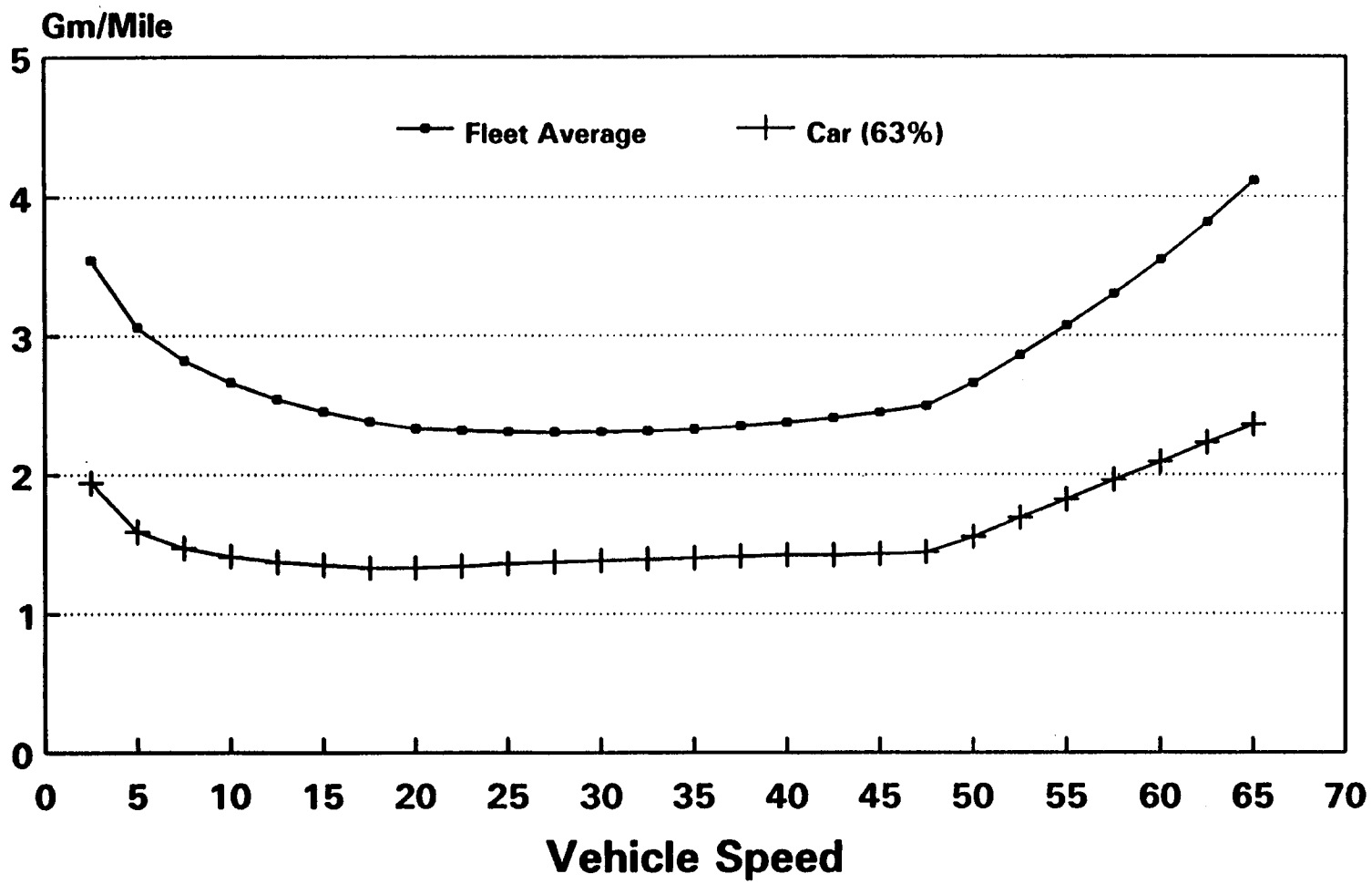


Figure 4. Speed curves for NO_x emission factors (enlargement of bottom two curves of Figure 3). Top curve - fleet averaged emission factor; and bottom curve - light duty passenger vehicle.

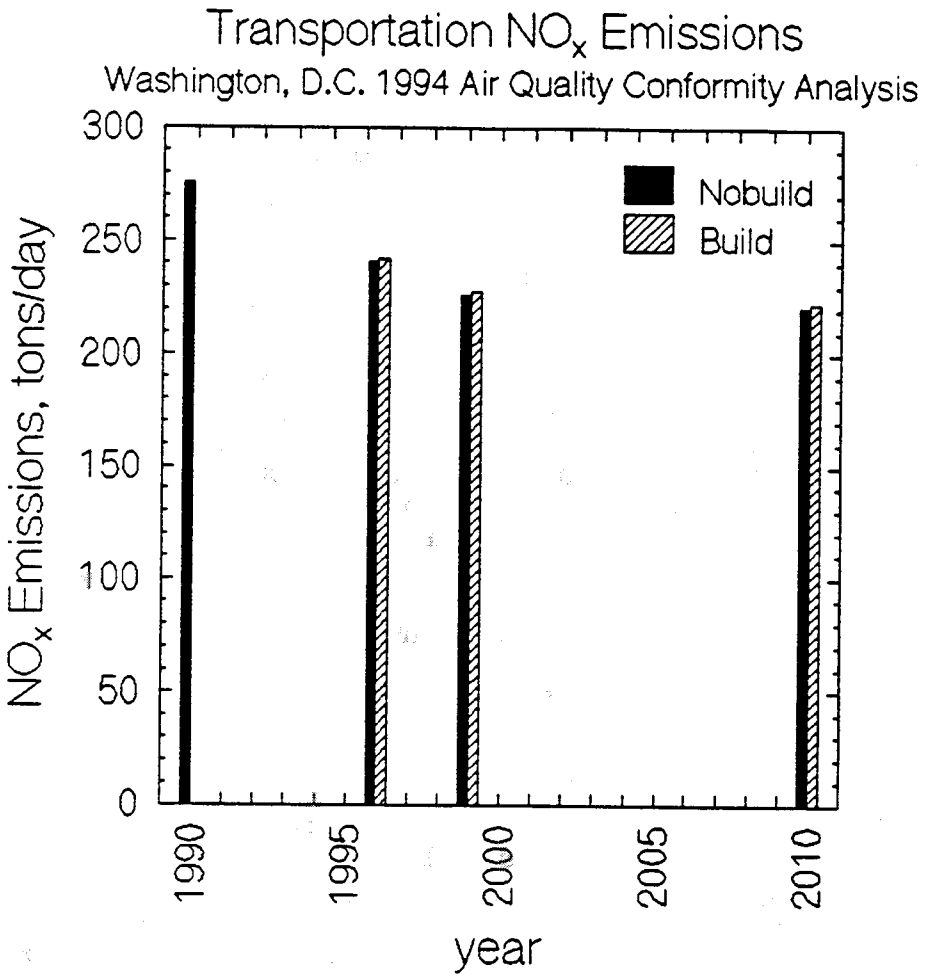


Figure 5. Trip cycle NO_x emissions by year and scenario for Washington, D.C. FY 1994 conformity analysis. Data from: Metropolitan D.C. Case Study, FHWA/TSC, in preparation.

TRANSPORTATION OPTIONS TO REDUCE NO_x EMISSIONS

The greatest strides in reducing transportation NO_x emissions will continue to arise from new vehicle technology developments, enhanced vehicle inspection and maintenance, and reformulated gasoline. However, these measures must be credited to both the "build" and "nobuild" scenario". Possible measures to reduce NO_x emissions which can be credited to solely the "build" option include the following.

- VMT Reductions: Travel demand management (TDM) strategies which reduce growth in VMT will often reduce NO_x emissions. TDM's in the "build" option that reduce VMT growth, even by very small amounts over the "no-build" option, should be considered and included in the NO_x analysis. **"Off model" calculations are permissible in order to capture small effects that otherwise would not surface in the model runs.** Because NO_x emissions are speed dependent, it is important to consider the redistribution of VMT among speed increments when assessing the impact of demand management strategies on NO_x emissions. TDM's that reduce VMT growth in higher-speed travel (above 45 MPH) are particularly helpful in reducing NO_x.

- Transit Improvements: Public transit can be a powerful tool to reduce VMT as well as vehicle trips. Examples include expanded transit service, lower fares, and innovative types of service. Transit improvements, by offering an equal or even better mobility alternative to the single-occupancy-vehicle (SOV), could be the necessary 'quid pro quo' to make politically palatable the various programs which discourage SOV use.

- Congestion Mitigation Measures: Speed improvements may increase or decrease NO_x emissions depending on the scenario (see Attachment "Background Data on Transportation NO_x Emissions"). NO_x emissions may decrease when measures such as signalization improvements are used in extremely congested areas.

- Speed Limit Enforcement: NO_x emissions increase dramatically with increasing speed above about 45-50 MPH. Speed limit enforcement can reduce NO_x emissions by redistributing VMT to lower speed increments.

- Older Vehicle Elimination: Motor vehicle NO_x controls were not introduced until the mid-1970s. The retirement of older vehicles will lower NO_x emissions because the retired VMT will be replaced with VMT from cleaner vehicles. Vehicle elimination in general may not be applied solely to the "build" scenario in performing a conformity analysis. However, FHWA will discuss with EPA the possibility to

credit solely to the "build" option those vehicle retirement programs (such as a cash for clunkers program or the replacement of older transit vehicles with cleaner ones) which are implemented specifically to mitigate emissions from transportation projects. In this case, we propose that the program be credited solely to the "build" scenario if the program sponsor commits to implementation of the program.

- Diesel Engine Restrictions: Heavy duty diesel engines (including truck and bus fleets) represent a disproportionate share of the motor vehicle NO_x emissions (see Attachment "Background Data on Transportation NO_x Emissions"). NO_x reductions could be achieved through fleet replacement with cleaner vehicles. This option would apply to those fleet replacement programs that are funded with Title 23 resources, Transit Act Funds, or if the program sponsor commits to a replacement strategy as part of the "build" scenario.

The effectiveness of these measures will vary greatly by area, depending on the area's ozone characteristics and the particular form of NO_x control strategy selected. Once any measures are used in a conformity analysis for a particular plan or TIP, they would become part of both the "build" and "no-build" scenarios in the next analysis. This means new measures would have to be added to future plans and TIPs to satisfy the NO_x conformity test.

Travel Demand Modelling Considerations on NOx Emissions

The following are preliminary recommendations. Research is currently underway to provide additional insight into the modelling effects on NOx emissions.

1. Include all measures in the analytic process which will alter Single Occupant Vehicle travel. This includes transit and TCM actions as well as non-transportation actions such as changes in zoning and land use. Some areas have not accounted for the reduction in travel associated with these measures in their modelling efforts. "Off-model" calculations are permissible (40 CFR 51.452(a)(1)) in order to capture small effects that otherwise would not surface in the model runs.

2. It is extremely important that modelers should accurately estimate speed. Post-processing of speeds after traffic assignment using more facility specific speed-capacity relationships may be more realistic than use of the speeds derived from the assignment. Since speed increases from very low speeds tend to reduce estimated NOx emissions (See the NOx curve attached), make sure VMT in this range is disaggregated. In Delaware, the replacement of daily speed assumptions (from a 24-hour assignment) with peak and off-peak speed distributions produced more accurate results, which substantially reduced the "build" NOx emissions.

3. Consideration should be given to the realism of the predicted speeds and volumes. Peak spreading under future congested conditions may be a more rational assumption than greatly reduced speeds during the peak. The EPA suggested that iterating congested assignment speeds back through trip distribution to achieve travel time consistency may result in shorter trips being estimated by the models under more congested condition. While techniques for performing this analysis are not currently available, the effect is currently under research sponsored by FHWA and EPA.

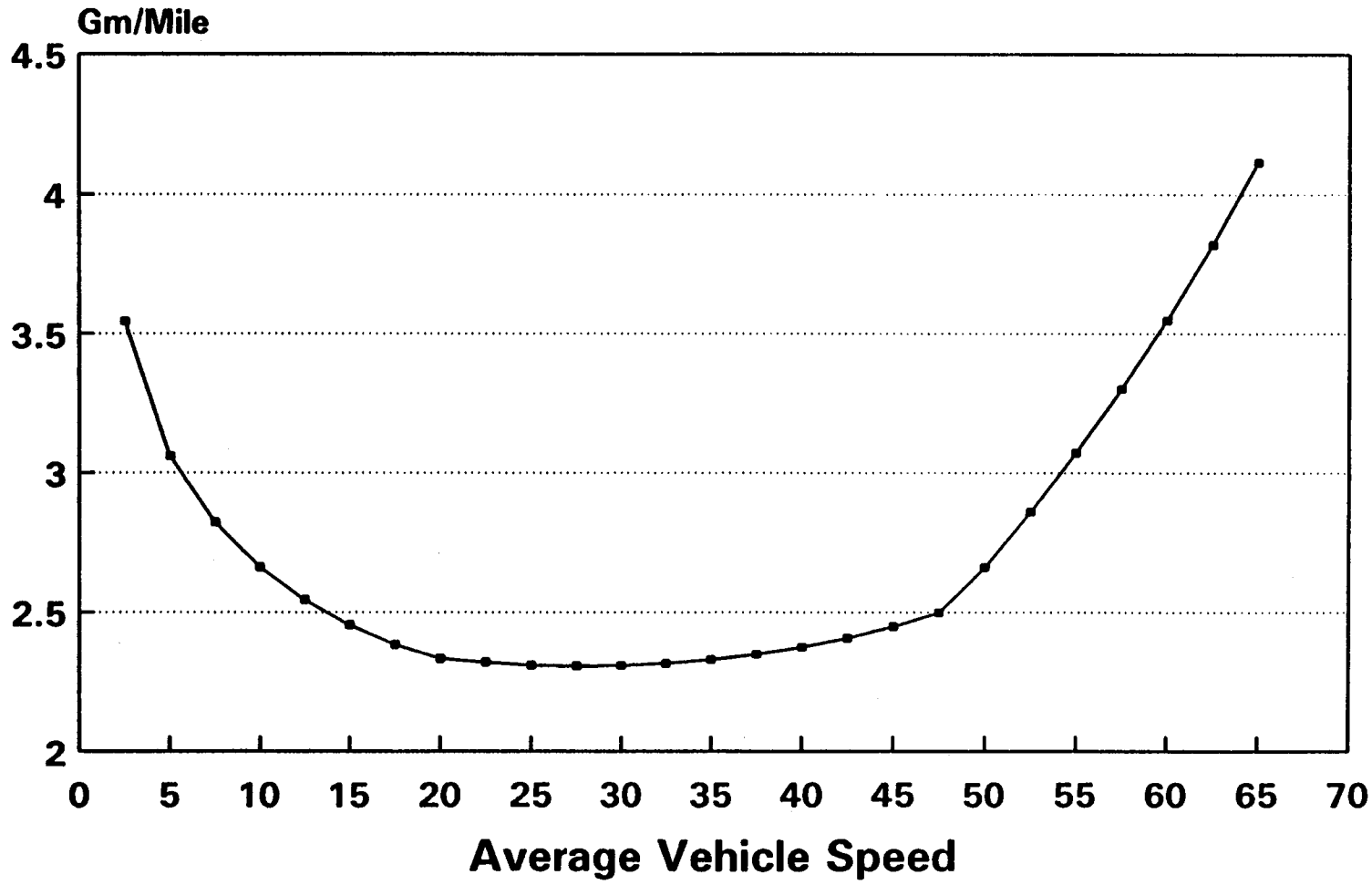
4. Adjustments and refinements to the modelling and other analysis must be carried out in the context of "good practice" (i.e., do not introduce modelling refinements that reduce NOx emissions for the build option and ignore equally valid refinements that would increase NOx emissions).

5. It is extremely important that the MPO and State DOT consult with and involve the State air quality agency and EPA in discussions and decisions about NOx modelling.

6. All modelling refinements should be carefully and fully documented.

NOx Emission Factors vs. Speed

(Year = 1995, Temp = 87.5F, Low Altitude)



12/10/93, J. Byun

CURRENT NO_x-RELATED CONFORMITY ISSUES

The final transportation conformity rule became effective on December 27, 1993 and is already generating significant impact on the approval status of transportation plans, programs and projects. In particular, many areas are facing difficulty in meeting the conformity requirements for NO_x.

Table 1 summarizes the NO_x-related conformity periods and tests. The interim period ends and transitional period begins when a SIP revision is submitted which contains an emissions budget (or the deadline for submission passes). The NO_x transitional period starts with submission of the ozone Attainment Plan SIP revision due 11/15/94. (While a 15% Reduction SIP for ozone was due on 11/15/93, EPA only applied it to volatile organic compounds (VOC), not NOx. An area may be in different conformity periods at the same time for VOC and NO_x.) The NO_x control strategy begins when the ozone Attainment Plan SIP revision is approved by EPA.

Ozone nonattainment areas subject to transportation conformity determinations include areas classified as marginal and above by the Clean Air Act Amendments of 1990, as well as maintenance areas and nonclassifiable areas, i.e. transitional, submarginal,

Table 1 - Conformity periods and tests for NO_x in ozone nonattainment areas.

Period	Time Frame	NO_x Conformity Tests for Plans and TIPs
Interim	12/27/93 until Attainment Plan SIP revision submission (or deadline)	(a) build/no-build (b) reductions below 1990 emissions
Transitional	Attainment Plan SIP revision submission (or deadline) until EPA approval of the SIP revision	(a) build/no-build (b) reductions below 1990 emissions (c) emissions budget
Control Strategy	Attainment Plan SIP revision approval until redesignation to attainment by EPA	(a) emissions budget
Maintenance	Twenty year period following attainment redesignation	(a) emissions budget

and incomplete data areas. Under the rule, all of these areas are subject to the NO_x tests.

NO_x conformity demonstrations are particularly challenging during the interim and transitional periods. Many areas are experiencing difficulty in meeting the "build/no-build" test. These tests are intentionally stringent to ensure transportation plans and TIPs will contribute to air quality improvement prior to the approval of a control strategy. During the interim and the transitional periods, areas must analyze emissions and pass a build/no build test for several different years, i.e. first milestone year, attainment year (or at least 5 years beyond the first milestone year if the milestone and attainment years are the same), the last year of the transportation plan's forecast period, and additional years as necessary to allow no more than a maximum of 10 years between any analysis years. The NO_x build/nobuild test must be passed for all of these years to enable a conformity determination, in accordance with EPA's rule.

In many cases, the emissions budget test will be easier to meet than the build/no build test. Therefore, it is advantageous that the ozone Attainment Plan SIP revision be expeditiously submitted and approved to remove the requirement to perform the build/no build test.

Among the issues raised to date:

- FHWA/FTA were unable to issue a joint conformity determination under the final conformity rule for the **Delaware** counties of New Castle and Kent. This decision was announced in a January 18, 1994 letter from the FHWA Region 3 Administrator and was reported in the January 28, 1994 AASHTO Journal. The emissions analysis failed the NO_x build/no-build test for 1996 and 1999. The problem is exacerbated by the status of Delaware's 15% VOC Reduction SIP which was due on 11/15/93. Because Delaware's SIP was found incomplete by EPA, no new plans and programs can be found to conform after May 15, 1994.

- **Victoria, Texas** is an "incomplete data" ozone nonattainment area which is required to demonstrate conformity under the final transportation conformity rule. The area must complete the process by May 1, 1994 to participate in the Texas 1994 funding process. Because of some confusion, the conformity requirement took the area by surprise. Although the conformity analysis is currently being performed, officials from the area are concerned that they will fail the NO_x test.

- All ten 1993 urban transportation programs in **Ohio** were found to conform under the Interim Phase I conformity requirements. Subsequent analysis has shown that only two of these programs would have passed the Interim Phase II

requirements of the final conformity rule; the remaining areas would have failed the NO_x build/no-build test. For example, the emissions analysis for Akron predicts a 35% reduction in NO_x by 1997 with respect to the 1990 baseline yet would fail the NO_x build/no-build test for 1997 by 0.2%. Governor G. Voinovich expressed his concern over the next round of conformity determinations in a January 15, 1994 letter to President Clinton.

These three scenarios demonstrate the range and magnitude of problems that arise in making conformity determinations for NO_x under the final transportation conformity rule. Based on comments from state and local agencies during nine recently conducted conformity workshops, we anticipate that additional areas will face difficulty meeting the final transportation conformity rule requirements on NO_x in the forthcoming round of plan and program conformity determinations. They may also face difficulties in meeting the test on the other pollutants as well.

NO_x WAIVERS AND OTHER EPA ACTIONS AFFECTING NO_x CONFORMITY

Currently Available Actions

1. **NO_x Waivers:** Section 51.194 of the transportation conformity rule provides that the conformity provisions apply to NO_x in ozone areas "unless the [EPA] Administrator determines under section 182(f) of the CAA that additional reductions of NO_x would not contribute to attainment." If EPA approves a waiver, it would eliminate the need for performing all NO_x conformity tests, including the build/no build. EPA recently issued guidance for obtaining NO_x waivers under section 182(f); this guidance was forwarded from FHWA Headquarters to the Regional Air Quality Specialists on February 4, 1994. Waiver opportunities exist for ozone nonattainment areas which: redesignate to attainment status and have not implemented NO_x reduction strategies; or demonstrate through photochemical modeling that additional NO_x reductions in the area would not contribute to attainment. Both measures may require a significant commitment of manpower and/or financial resources. When appropriate, however, areas should pursue NO_x waivers expeditiously. EPA has six months to rule on NO_x waiver submissions.

   In particular, ozone nonattainment areas with complete monitoring data which meets the ozone standard are encouraged to expedite their attainment redesignation SIP revision submissions. NO_x waivers may be requested when submitting for attainment redesignation.

2. **SIP Submittals:** Once an area submits and EPA approves the transportation budget in the SIP, the build/no build test for NO_x is no longer required, and the area must simply conform to the budget. In many cases it may be easier for the transportation sector to demonstrate conformity to the SIP budget than to satisfy the build/no build test, and the budget is more meaningful to reaching attainment. **Therefore, areas should make every effort to expedite submission of an approvable SIP revision with a transportation budget, and to obtain EPA approval of that SIP budget.** FHWA and FTA will continue to encourage EPA to act expeditiously on SIP budget submissions.

Proposed Actions Being Pursued with EPA

1. **NO_x Waivers:** FHWA will urge EPA to carefully consider such waiver requests and grant them expeditiously where the area provides a good case for the waiver. Since EPA's recently-issued waiver guidance was written with primarily stationary sources in mind, FHWA will encourage EPA to review and modify as appropriate the application of this guidance to

transportation conformity. We have been informed that EPA is developing a process for granting NOx waivers ahead of formal redesignation and maintenance plan approval, in areas with ambient data showing that attainment has in fact been achieved. FHWA and FTA will continue discussions with EPA on the appropriate use of this waiver authority and giving expeditious consideration to waivers.

2. **Additional Proposed Actions:** In the future, FHWA will discuss additional proposals with EPA regarding NO_x conformity. For example, the General Conformity Rule provides de minimis emission levels for individual non-transportation Federal projects. FHWA and FTA will discuss with EPA the merits of applying de minimis emission increases to transportation conformity tests. We will also explore with EPA the possibility of relaxing the NO_x conformity test requirements for nonclassifiable (transitional, submarginal, and incomplete/no data) ozone nonattainment areas. Some proposals may require a formal amendment to the conformity regulation, and therefore could not be immediately available.

FHWA HEADQUARTERS CONTACTS FOR FURTHER INFORMATION ON NOx

Conformity rule and NOx:	Kathy Laffey, HEP-41 Phone: (202) 366-2077
Transportation strategies to reduce NOx:	Jay R. Turner, HEP-41 Phone: (202) 366-2072
NOx issues related to transit:	Abbe Marner, TGM-22 Phone: (202) 366-0096
NOx - modelling:	John Byun, HEP-41 Phone: (202) 366-2204
Transportation modelling:	John Byun, HEP-41 Phone: (202) 366-2204 Patrick DeCorla-Souza, HEP-22 Phone: (202) 366-4076
Information on NOx trends and transportation contribution to NOx:	Jay R. Turner, HEP-41 Phone: (202) 366-2072
EPA waivers and other EPA policy options re: NOx:	Kathy Laffey, HEP-41 Phone: (202) 366-2076 Jay R. Turner, HEP-41 Phone: (202) 366-2072

Appendix B

U.S. Department of Transportation

Federal Highway Administration

Memorandum

Subject: **INFORMATION:** Conformity and Nitrogen Oxides (NOx) Date: MAY 17 1994

From: Director, FHWA Office of Environment and Planning
Director, FTA Office of Planning

Reply to Attn of: HEP-41

To: Directors, FHWA Office of Planning and Program Development (Regions 1-7 and 10)
Directors, FHWA Office of Program Development (Regions 8 and 9)
Directors, FTA Office of Program Development (Regions 1-10)

On March 10, 1994, we provided you with information and guidance on NOx emissions because of the difficulty that some State and metropolitan areas are experiencing with the new NOx requirements in the EPA's transportation conformity regulation. Attached is further information on efforts being made to understand and evaluate the NOx impacts of transportation plans and programs. The material summarizes what we have learned from Ohio's NOx modeling experiences, and suggestions we provided to further refine their NOx modeling capabilities.

Some key observations and conclusions from the Ohio analyses are as follows:

- The TRB Highway Capacity and Quality of Service Committee is currently updating the curves which reflect the speed versus volume/capacity ratio relationships. These new curves show a much flatter speed curve when compared to volume to capacity ratios than those included in the 1985 HCM. This tends to reduce the differences in the modeled NOx emissions between the build and no-build alternatives. It is permissible to use the new speed curves in current conformity analyses.

- On the other hand, the new curves tend to generate higher total NOx emissions estimates for both the build and no-build alternatives because the new curves reflect higher and more consistent speeds even as the volume to capacity ratios increase. This may create some problems in meeting the modeled hydrocarbon emissions budgets, and future NOx emission budgets. This is particularly true if the budgets are established using the speed versus volume/capacity curves in the 1985 HCM and the conformity analyses are completed using the newer curves. If this is the case, the SIP emissions budgets may need to be revised to reflect the new speed curves, since speed is an important factor in MOBILE5A for estimating emissions.

- Speed enforcement on the freeway system can reduce NOx emissions. The Ohio NOx model analysis demonstrated that enforcing the speed limit on freeways between 11 p.m. and 1 a.m. could eliminate the NOx problem in the city of Cincinnati, because of the high percentage of truck traffic during this period. Truck traffic contributes a disproportionate amount of the total mobile source NOx emissions--approximately 40-50 percent of NOx from highway vehicles. Speed enforcement, however, can only be used in the conformity analysis if it is a specific mitigation measure which is directly linked to the build alternative.

- The Ohio DOT estimated their traffic volumes and speeds on an hourly basis for individual links. The link level focus of the emissions calculation is both valid and necessary. Improvements to individual, low speed, congested links can generate NOx reductions because the speeds for the no-build alternative are typically below the minimum point on the "U" shaped NOx curve in MOBILE5A. These emission reductions might not show up with a higher average speed calculated over a widespread area. However, it may not be necessary to calculate speeds and emissions on an hourly basis. Four or five aggregate time periods over the course of the day may suffice (e.g. a.m. peak, off-peak day, p.m. peak, evening off-peak, late night off-peak).

Another potential source of NOx reductions is from traffic flow improvements and demand management on highly congested arterial and local roadways. Typically, under the no-build alternative, these facilities operate at speeds below the NOx minimum point for significant time periods of the day. Any NOx increases from freeway improvements can often be offset by NOx reductions on arterials and local streets. This occurs on facilities parallel to the freeway because of traffic diversions, but this can also be aggressively pursued by including transportation demand management strategies and/or traffic flow improvement projects in the TIP for small congested facilities throughout the region as an offset for any emissions increases for the freeway or other high speed facility.

The best way to estimate emissions reductions from small facility improvements is to incorporate them into the simulation model network. This procedure directly estimates the effect of these improvements on operating speed and VMT. If the highway network of a given region is inadequate to support this level of detail, reasonable professional methodologies may be developed.

Also attached for your information is a copy of a memorandum dated April 5, 1994, from David J. Brzezinski, Chief of EPA's Model Development Section in Ann Arbor, Michigan, regarding the effect of VMT growth on MOBILE5A NOx estimates. The FHWA is currently reviewing this material and intends to discuss the methodology and conclusions with EPA. The EPA conducted an analysis on the effect of VMT growth rates because of the concern that even moderate growth rates would cause mobile source NOx emissions to exceed the 1990 base-year levels. Not surprisingly, the results show that as VMT growth rates increase, the 1990 base year emission levels will be exceeded sooner. For example, for an area that has a basic I/M program and a 2 percent annual growth rate, the 1990 levels would not be exceeded until 2020. However, the same area with a 4 percent annual VMT growth rate would exceed 1990 levels by 1992 and beyond. The analysis also shows that technology will also increase the time period before the 1990 levels are exceeded. For example, an area

with an enhanced I/M program and the introduction of Low Emitting Vehicles will not exceed the 1990 base-year levels by 2020 for either a 2 percent or 4 percent annual VMT growth rate. Consequently, areas that are projecting their NOx emissions to exceed 1990 base-year levels will need to more aggressively pursue transportation demand management strategies and/or "opt" into additional technological programs.

As additional information on this important subject becomes available, we will continue to provide national distribution. We would also appreciate learning of other State and local methodologies and insights for possible distribution.

Samuel L. Zimmerman

Kevin E. Heanue

9 Attachments

cc: Jane Garvey
Tony Kane
Ed Kussy
Reid Alsop
Abbe Marner, FTA
Camille Mittelholtz, OST
Phil Lorang, EPA
Paula Van Lare, EPA
Jon Kessler, EPA
Dave Clawson, AASHTO
Nancy Krueger, STAPPA/ALAPCO
Rich Weaver, APTA
Becky Brady, NCSL
Lydia Conrad, NGA
Joan Glickman, ICMA
Janet Oakley, NARC
Robert Fogel, NACO
Cara Woodsen, NLC
Kevin McCarthy, USCM
Leo Penne, Nevada Office
Mike McGarry, Ohio Office

SUMMARY
Ohio NOx Analysis Methods
and
Opportunities for Further Refinement

INTRODUCTION

The Ohio DOT (ODOT) has done extensive work on their transportation modeling processes in order to comply with the air quality analysis requirements of the CAA and the recently enacted transportation conformity requirements. On March 10, 1994, Fred Ducca and John Byun of FHWA Headquarters visited ODOT to discuss issues related to conformity and NOx. Chuck Gebhardt represented ODOT. The following are findings from the visit:

1. The ODOT has done extensive work to expand the traditional 4-step transportation modeling process, both in terms of the individual link details and the time periods considered. They have also been extremely thorough in collecting field data to support these model refinements. Traffic volumes and speeds were estimated on an hourly basis. Using this model set, all the Ohio nonattainment areas evaluated showed small increases in NOx for the build compared to the no-build alternative.

2. Based on NOx speed data developed by the California Air Resources Board, ODOT developed a freeway analysis method which increases NOx emission factors associated with ramps/weaving operations, but decreases NOx emission factors associated with mainline operations (see **Attachment 2**). This method consistently reduced the difference in NOx estimates between build and no-build alternatives (see **Attachment 3**). The methodology was preliminarily discussed with EPA but until EPA can verify this methodology and modify the MOBILE5 emission factors for all States, the conformity regulations will not permit them to be used.

3. For Toledo, ODOT tested several TCMs to evaluate their ability to reduce NOx. Even though some of the strategies were aggressive (see **Attachment 4**), none were capable of reducing NOx emissions by 2 percent, even under an assumed reduction in total area auto work trips of 10 percent.

4. The FHWA review team noted that the post processor used by ODOT in estimating freeway speeds (the speed vs. volume/capacity ratio relationship) is similar to the 1985 HCM method (see **Attachment 5**). The large speed variation based on capacity is responsible for some of the increase in NOx when highway improvements are made.

   However, updates of these speed/capacity relationships are currently underway by the TRB Highway Capacity and Quality of Service Committee. New updates of the freeway curves were approved by the Committee in 1992 and were printed for the Committee on February 7, 1994. The latest research indicates that speed is almost constant with all Levels Of

Service until volume reaches the critical level (see **Attachments 6 and 7**). Also, the Committee adopted increased freeway lane capacities from 2000 passenger cars per hour per lane (PCPHPL) to 2200 PCPHPL for 4-lane freeways and 2300 PCPHPL for 6-lane freeways. Publication of the new material as a formal part of the HCM is expected later this year.

It was expected that incorporating these updates in the model would reduce the difference in NOx emissions between build and no-build analysis. Also, the entire NOx analysis would need to be re-run within the modeling framework because the assignment process would redistribute traffic among arterials and freeways based on the newly adjusted link speeds. The results of making this change in Ohio (see **Attachment 8**) raised the overall NOx estimates for both the build and the no-build cases slightly, but the build alternative became better than the no-build alternative for NOx in Springfield and Toledo, and NOx differences were reduced in the other areas.

5. The FHWA team also noted that hourly NOx emissions on freeways during off-peak periods were relatively high even though overall traffic volume on freeways was low. This effect occurred because of the large percentage of heavy-duty diesel trucks on freeways during evening off-peak periods between midnight and 4 o'clock in the morning (heavy-duty diesel vehicles emit disproportionate amounts of NOx--approximately 40-50 percent of total NOx from highway vehicles). Because speeds during these times were fairly high and NOx emission rates increase rapidly above 80 KPH (50 mph), it was expected that a speed enforcement program would significantly reduce NOx projections.

   The ODOT re-ran the NOx emissions model with revised speed curves for Cincinnati and modeled a strict late night speed limit enforcement. The results are shown below:

   o Total NOx for

build	alternative:	99.026 metric tons/day
no-build	alternative:	98.657 metric tons/day
	difference:	0.369 metric tons/day
percent	difference:	0.37 percent

   o Impact of freeway speed enforcement 88 KPH (55 mph)

11 p.m. - 12 a.m.	-0.326 metric tons/day
12 a.m. - 1 a.m.	-0.201 metric tons/day
1 a.m. - 2 a.m.	-0.113 metric tons/day
2 a.m. - 3 a.m.	-0.180 metric tons/day
3 a.m. - 4 a.m.	-0.153 metric tons/day
4 a.m. - 5 a.m.	-0.153 metric tons/day
5 a.m. - 6 a.m.	-0.191 metric tons/day

   Therefore, speed enforcement for any 3-hour period between 11 p.m. and 6 a.m. would produce NOx reductions greater than the build/no-build difference in Cincinnati.

CONCLUSIONS

1. Updating transportation models to current speed/capacity relationships will lessen the modeled NOx increase associated with the build condition, but not necessarily make it go away. Also, it may generate slightly higher mobile source NOx emission estimates for both build and no-build alternatives.

2. The Ohio NOx model analysis demonstrated that enforcing the 88 KPH (55 mph) speed limit on freeways (where the speed limit is already 88 KPH) between 11 p.m. and 1 a.m. could eliminate NOx problems for the city of Cincinnati. However, caution should be exercised before using this strategy. The program would need to be included as a mitigation strategy that is clearly linked to the build option, and would not otherwise occur. The State DOTs/MPOs would need to coordinate this TCM with EPA's regional office, State and city police departments, and FHWA's regional office to assure that such a program would be acceptable and that all parties agree on the scope and effectiveness of such a program based on public acceptability, limitations on budget, technical difficulties, or legal problems.

3. It is becoming increasingly clear that the analyses required as part of the conformity finding for transportation TIPs and Plans are showing exceedingly small differences in travel and emission estimates between build and no-build alternatives. Refinements to travel models will increase their ability to reflect small differences between options, but will not consistently eliminate the potential for modeled NOx increases for the build option over the no-build. Transportation capital investments and most TCMs may be helpful, but often produce only minor changes in mobile source emission projections, unless the proposals alter travel choices in fundamental ways and affect large segments of the traveling public, or are targeted effectively to vehicles which emit disproportionately large amounts of NOx.

PROCEDURE AND ADJUSTMENTS USED BY ODOT

1. ODOT increased emissions associated with ramps and decreased emissions associated with smooth running. (Note: EPA is evaluating this technique.)

2. The ramp speeds are assumed as one half the merge or diverge speed with maximum speed being 92.8 KPH (58 mph) and minimum being 17.6 KPH (11 mph).

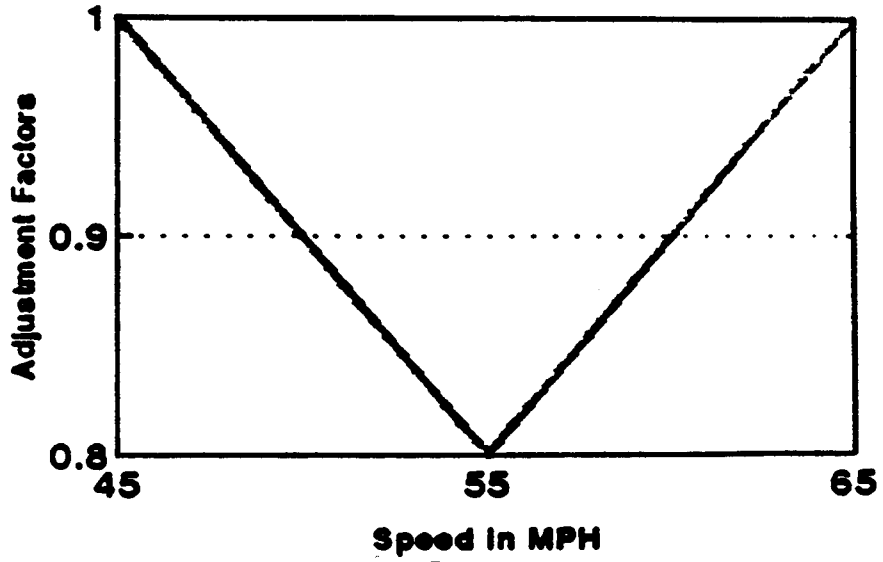
3. To better estimate the effect of acceleration or deceleration, adjustment factors are multiplied by MOBILE5A emission factors.

	Factors for Pollutant		
	HC	CO	NOx
o For Ramps:	1.5	1.5	1.0
o For Surface Arterials:	1.0	1.0	1.0

o For freeways operating in a steady state mode with speed equal to or greater than 72 KPH (45 mph):

* For NOx, the factor is 0.80.
* For HC and CO, the factor is 1.0 at 72 KPH (45 mph) and decreases linearly from 1.0 at 72 KPH (45 mph) to 0.8 at 88 KPH (55 mph) and then increases linearly to 1.0 at 104 KPH (65 mph).

HC And CO Adjustment Factors Applied to Steady Speed Freeway



FY95 BUILD AND NO-BUILD TIP AIR QUALITY ANALYSIS FOR OHIO NONATTAINMENT AREAS

Study Area	Scenario	Without Factors # NOx Tons/Day *	Without Factors # Difference In NOx	With Factors # NOx Tons/Day *	With Factors # Difference In NOx
AKRON	No-Build	38.375		34.280	
	Build	38.837		34.610	
		0.462	1.19%	0.330	0.95%
CINCINNATI	No-Build	92.610		84.225	
	Build	93.631		84.943	
		1.021	1.09%	0.718	0.85%
SPRINGFIELD	No-Build	8.273		7.443	
	Build	8.323		7.474	
		0.050	0.60%	0.031	0.41%
TOLEDO	No-Build	30.811		28.218	
	Build	30.975		28.366	
		0.164	0.53%	0.148	0.52%
YOUNGSTOWN	No-Build	27.315		25.105	
	Build	27.829		25.399	
		0.514	1.85%	0.294	1.16%

Source: OHIO DOT, Chuck Gebhardt

* Units are in metric tons and can be converted to English tons by multiplying by 1.1024.

ODOT developed factors associated with freeway ramp and mainline operations (see Attachment 2).

Toledo 1996 TCM Alternatives

1990 Network Loaded with 1996 Trips

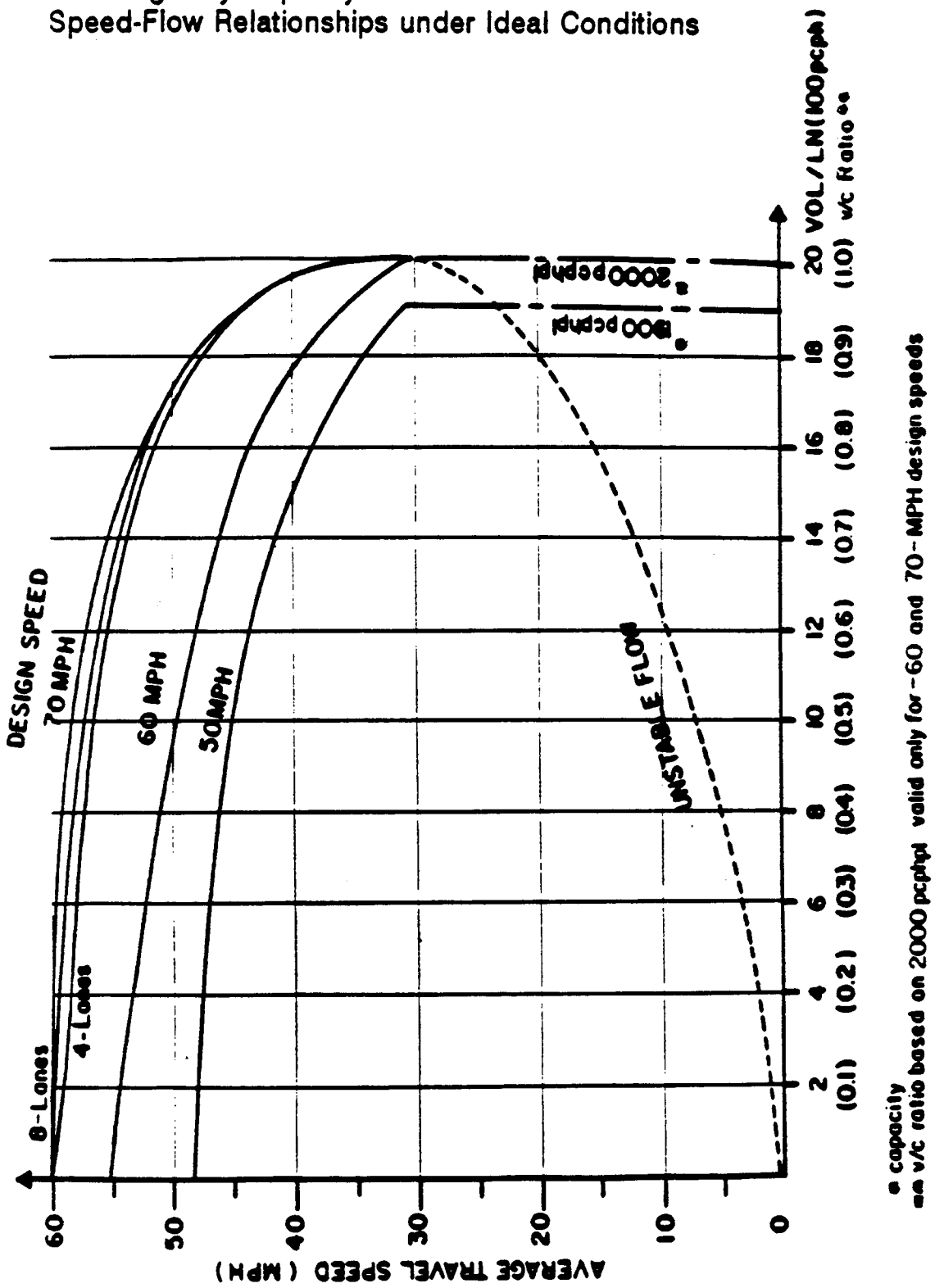
Description	Transit Trips	NOx Tons/Day *	Difference in NOx #
1996 No-Build Base Case Base Transit Fare = $.50	22,966	20.285	
Transit Fare = $.25	37,244	20.231	-0.26%
Transit Fare = $.00	61,232	20.133	-0.75%
Add Parking Cost $5.00 (where fee imposed)	65,170	20.093	-0.94%
Auto Out of Pocket Cost (10% Increase)	25,436	20.148	-0.68%
Auto Out of Pocket Cost (25% Increase)	28,104	20.074	-1.04%
Transit Frequency (50% Increase)	33,042	20.236	-0.24%
Transit Frequency (100% Increase)	38,952	20.212	-0.36%
Auto Work Trip (5% Reduction)	22,966	20.203	-0.40%
Auto Work Trip (10% Reduction)	22,966	19.916	-1.82%

Source: OHIO DOT, Chuck Gebhardt

* Total daily mobile source NOx in metric tons. MOBILE4.1 was used for the study.

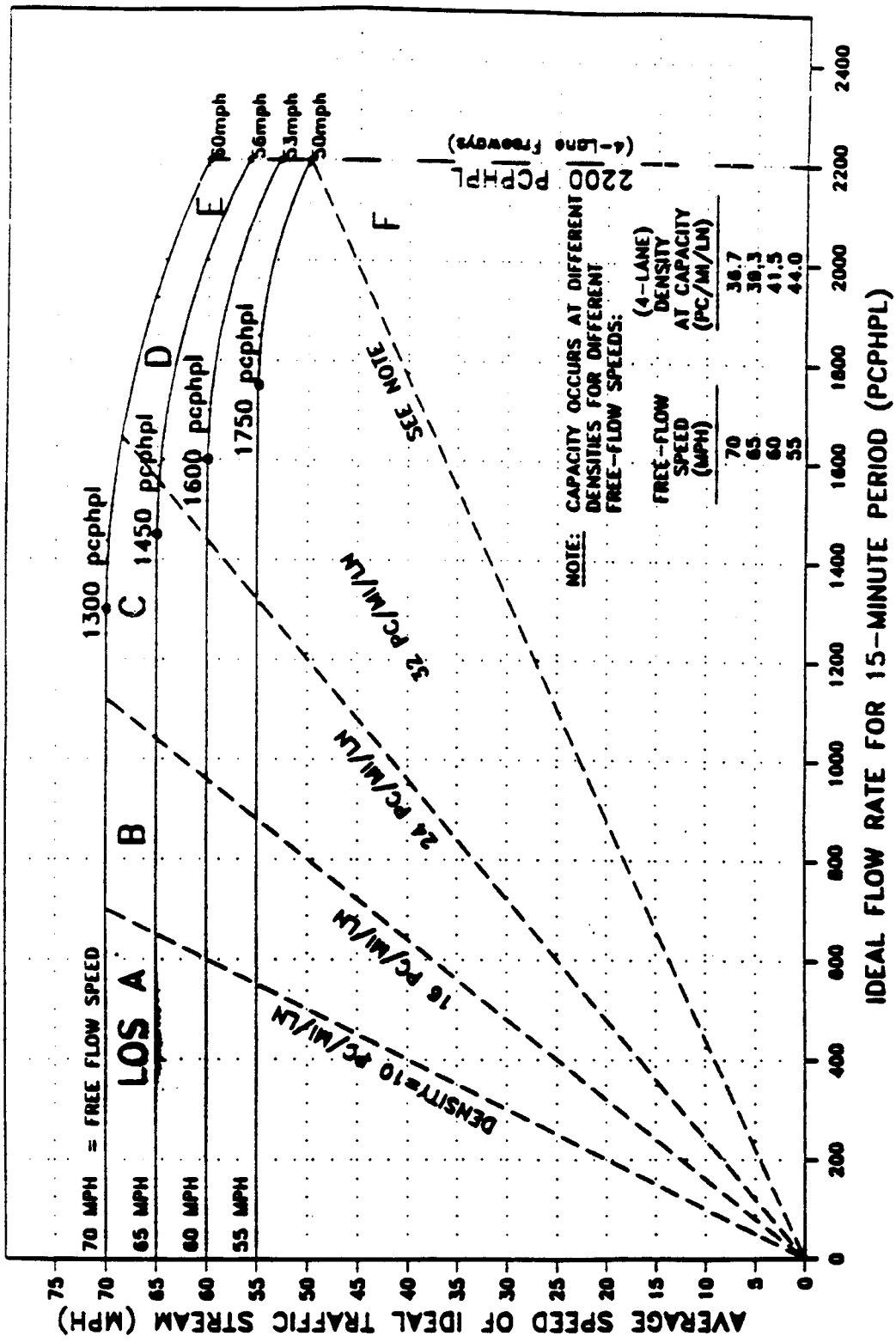
Individual TCMs were evaluated and compared with 1996 no-build base case.

1985 Highway Capacity Manual:
Speed-Flow Relationships under Ideal Conditions



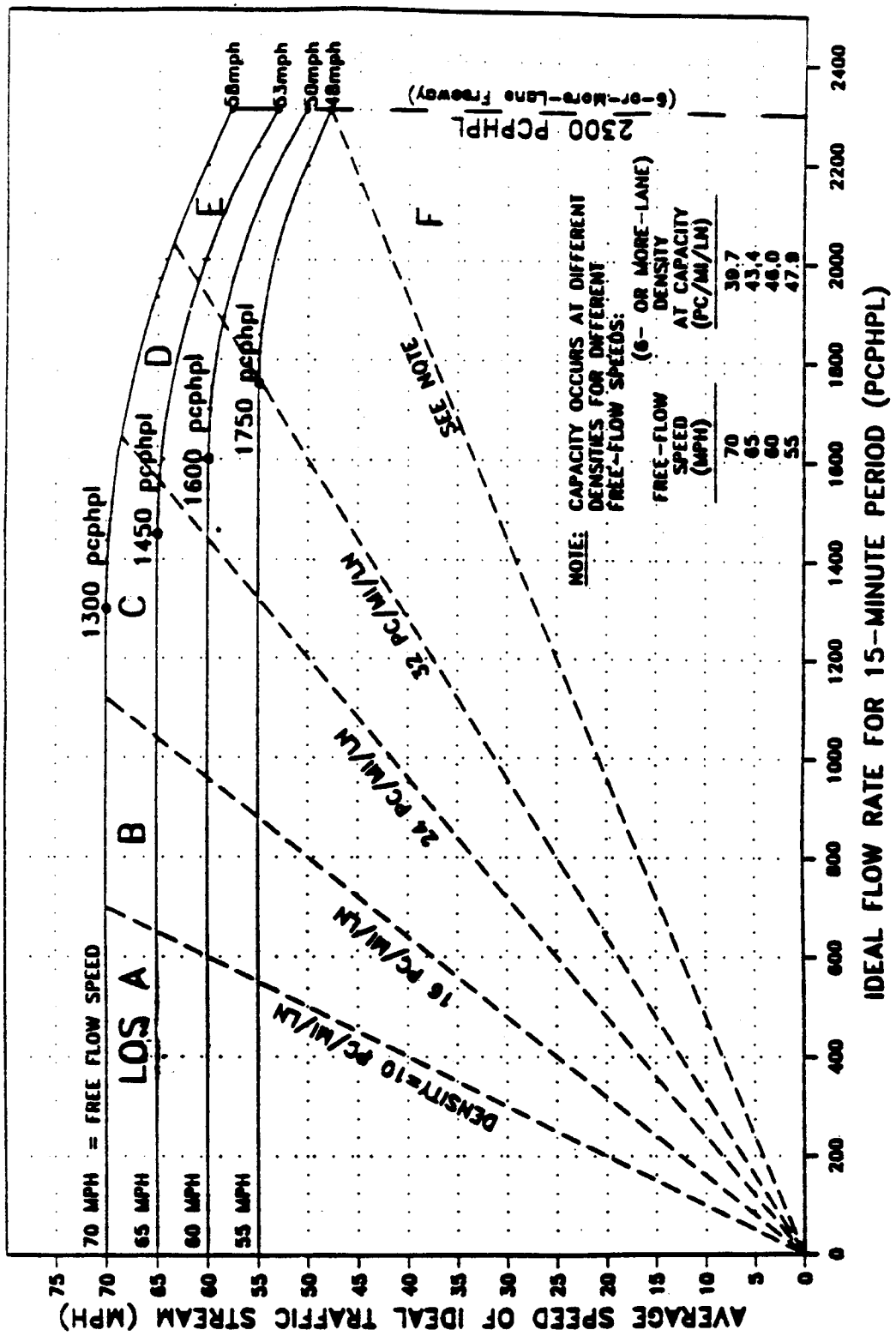
Source: Highway Capacity Manual, Special Report 209
Transportation Research Board, 1985.

Forthcoming 1994 Highway Capacity Manual:
Speed-Flow Relationships for Four-Lane Freeways



Source: Chapter 3, Basic Freeway Sections
Highway Capacity and Quality of Service Committee
Transportation Research Board
Additional Revision February 7, 1994

Forthcoming 1994 Highway Capacity Manual:
Speed-Flow Relationship for 6- or More-Lane Freeways



Source: Chapter 3, Basic Freeway Sections
Highway Capacity and Quality of Service Committee
Transportation Research Board
Additional Revision February 7, 1994

FY95 BUILD AND NO-BUILD TIP AIR QUALITY ANALYSIS FOR OHIO NONATTAINMENT AREAS WITH NEW SPEED CURVE

Study Area	Scenario	NOx Tons/Day *	Difference in NOx
AKRON	No-Build	40.641	
	Build	40.837	
		0.196	0.48%
CINCINNATI	No-Build	98.657	
	Build	99.026	
		0.369	0.37%
SPRINGFIELD	No-Build	8.525	
	Build	8.516	
		-0.009	-0.10%
TOLEDO	No-Build	32.691	
	Build	32.667	
		-0.024	-0.07%
YOUNGSTOWN	No-Build	28.046	
	Build	28.445	
		0.399	1.40%

Source: OHIO DOT, Chuck Gebhardt

* Units are in metric tons and can be converted to English tons by multiplying by 1.1024.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ANN ARBOR MICHIGAN 48105

OFFICE OF
AIR AND RADIATION

April 5, 1994

MEMORANDUM

SUBJECT: Effect of VMT Growth on MOBILE5 NOx Estimates

FROM: David J. Brzezinski, Chief
Model Development Section, AQAB

TO: Philip A. Lorang, Director
Emission Planning and Strategies Division, OMS

THRU: Lois A. Platte, Chief
Air Quality Analysis Branch, EPSD

There is some concern that future highway mobile source fleet emissions of oxides of nitrogen (NOx) will exceed base year 1990 levels even with moderate growth in vehicle miles travelled (VMT). We have examined this issue and provide the following analysis.

Using the latest version of the MOBILE5 model (March 26, 1993), a base scenario was chosen using the following parameters:

- o Summer temperatures (72 to 92 degrees fahrenheit)
- o National average fleet characteristics
- o Industry average fuel characteristics at 8.7 psi RVP
- o National average hot/cold start VMT fractions

Other parameters were varied to investigate their effect on the trend in emissions. Primary in these was the assumed I/M program description, since I/M can affect current and future NOx emission levels. The following I/M program descriptions were used:

Basic Program

- o 1983 program start year
- o 40% stringency factor
- o 1968 and newer model year vehicle coverage
- o No waivers
- o 100% compliance rate
- o All gasoline vehicle classes covered
- o Test-only, biennial inspections
- o Idle test procedure (all model years)
- o Full anti-tampering program (all components)

IM240 Program

- o Same as Basic Program except:
- o IM240 test procedure for all model years
- o Cutpoints: 0.8/20/2.0 g/mi HC/CO/NOx

All scenarios were done at 19.6 miles per hour. Non-I/M cases were done at 27 and 50 miles per hour to investigate the potential effect of speed on the NOx results. Also, one case was done assuming introduction of new vehicles certified to the new Low Emitting Vehicle (LEV) standards proposed by California. The model was evaluated every other calendar year from 1990 through 2020. Growth rates from zero to 6% were assumed and applied linearly to the 1990 base NOx levels. The results of the analysis are presented in the attached tables.

Table 1 shows the non-I/M case at 19.6 miles per hour. In this case a growth rate of 2% will cause NOx emission levels to exceed 1990 base NOx emission levels, but not until calendar year 2020. A 3% growth will cause NOx emission levels to exceed the 1990 base NOx emission levels immediately. Fleet turnover, however, keeps NOx levels close to the 1990 levels until 2010, when the growth in VMT overcomes fleet turnover and emission increase continuously.

Table 2 shows the Basic I/M case at 19.6 miles per hour. The Basic I/M program design reduces NOx emissions by deterrence of tampering behaviour and repairs of tampering with emission control devices that control NOx emissions. In this case, as in the non-I/M case, a growth rate of 2% will cause NOx emission levels to exceed 1990 base NOx emission levels, but not until calendar year 2020. A 3% growth will not cause NOx emission levels to exceed the 1990 base NOx emission levels until calendar year 2000. A 4% growth causes NOx emissions to increase continuously. In this case, if it is assumed that in the 1990 base year there was no I/M program, the 1990 NOx emission target would be 3.000 g/mi. Therefore, if the I/M program were applied after the base year as a control strategy, at a 3% growth, the I/M program would delay the exceedance of the 1990 base levels until calendar year 2010.

Table 3 shows the IM240 I/M case at 19.6 miles per hour. The IM240 I/M program design identifies high NOx emitting vehicles using an IM240 test and requires their repair in addition to identifying vehicles with tampering. In this case, a growth rate of 2% will not cause NOx emission levels to exceed 1990 base NOx emission levels until sometime after calendar year 2020 (the limit of the model). A 3% growth will not cause NOx emission levels to exceed the 1990 base NOx emission levels until calendar year 2020. A 4% growth causes NOx emissions to exceed 1990 levels in calendar year 2012. A 5% growth causes NOx emissions increase continuously. As before for the Basic I/M case, if it is assumed

that in the 1990 base year there was no I/M program, the 1990 NOx emission target would be 3.000 g/mi. Therefore, if the I/M program were applied after the base year as a control strategy, at a 3% growth, the I/M program would not exceed the 1990 base levels until after calendar year 2020. The exceedance for a 4% growth would be delayed until calendar year 2014. Even a 5% growth would not cause an exceedance until calendar year 2008.

Table 4 repeats the IM240 I/M case at 19.6 miles per hour assuming introduction of new vehicles certified to the new Low Emitting Vehicle (LEV) standards proposed by California. These vehicles will be subject to a more stringent IM240 exhaust emissions cutpoints resulting in emission rates which will, on average, meet the emission standards for these vehicles at 50,000 miles. The LEV program is phased in starting in 1994 and is fully operational by 2003. In addition to the NOx reducing effects of the I/M program, the lower new vehicle NOx standards continues the effect of fleet vehicle turnover. In this case, a growth rate of 5% will cause NOx emission levels to exceed 1990 base NOx emission levels until 2000 when the reduction in emissions due to the LEV program outweighs the VMT growth. The LEV program continues to cause reductions until sometime after calendar year 2020 (the limit of the model). Similarly, a 6% growth will cause NOx emission levels to exceed the 1990 base NOx emission levels until calendar year 2000. But, the LEV program causes a reduction for the period 2000 through 2012. As before for the Basic I/M case, if it is assumed that in the 1990 base year there was no I/M program, the 1990 NOx emission target would be 3.000 g/mi. Therefore, if the I/M program were applied after the base year as a control strategy, up to a 6% growth, the I/M program would not exceed the 1990 base levels until after calendar year 2020.

Most urban areas have fleet average trip speeds greater than 19.6 miles per hour. For comparison, the non-I/M case was repeated assuming an average trip speed of 27 miles per hour and are shown in Table 5. In this case, although the absolute NOx emission rates have changed, the effect of growth on exceedance of the 1990 base NOx emission levels is similar. A similar table done with a speed of 50 miles per hour shows a similar outcome. This demonstrates that the effect of speed on absolute NOx emission levels is not a major factor in the exceedance of 1990 base NOx emission levels.

Table 6 shows the factors used to increase the emission rates to reflect increases in VMT as a result of growth. Growth was assumed to be a linear increase in VMT from the base year level.

cc: T. Newell
C. Radwan
J. Armstrong, ECSB

Table 1

All Vehicle Fleet NOx Emission Rate (g/mi) with Growth Without I/M Case (19.6 mph)

Calendar Year	Year	Growth Rate 0%	1%	2%	3%	4%	5%	6%
1990	0	3.000	3.000	3.000	3.000	3.000	3.000	3.000
1991	1							
1992	2	2.830	2.887	2.943	3.000	3.056	3.113	3.170
1993	3							
1994	4	2.689	2.797	2.904	3.012	3.119	3.227	3.334
1995	5							
1996	6	2.536	2.688	2.840	2.992	3.145	3.297	3.449
1997	7							
1998	8	2.419	2.613	2.806	3.000	3.193	3.387	3.580
1999	9							
2000	10	2.274	2.501	2.729	2.956	3.184	3.411	3.638
2001	11							
2002	12	2.153	2.411	2.670	2.928	3.186	3.445	3.703
2003	13							
2004	14	2.061	2.350	2.638	2.927	3.215	3.504	3.792
2005	15							
2006	16	2.015	2.337	2.660	2.982	3.305	3.627	3.949
2007	17							
2008	18	1.973	2.328	2.683	3.038	3.394	3.749	4.104
2009	19							
2010	20	1.950	2.340	2.730	3.120	3.510	3.900	4.290
2011	21							
2012	22	1.931	2.356	2.781	3.205	3.630	4.055	4.480
2013	23							
2014	24	1.920	2.381	2.842	3.302	3.763	4.224	4.685
2015	25							
2016	26	1.916	2.414	2.912	3.410	3.909	4.407	4.905
2017	27							
2018	28	1.916	2.452	2.989	3.525	4.062	4.598	5.135
2019	29							
2020	30	1.917	2.492	3.067	3.642	4.217	4.793	5.368

Table 2

All Vehicle Fleet NOx Emission Rate (g/mi) with Growth
Basic I/M & ATP Case (19.6 mph)

Calendar Year	Year	Growth Rate						
		0%	1%	2%	3%	4%	5%	6%
1990	0	2.947	2.947	2.947	2.947	2.947	2.947	2.947
1991	1							
1992	2	2.764	2.819	2.875	2.930	2.985	3.040	3.096
1993	3							
1994	4	2.614	2.719	2.823	2.928	3.032	3.137	3.241
1995	5							
1996	6	2.470	2.618	2.766	2.915	3.063	3.211	3.359
1997	7							
1998	8	2.357	2.546	2.734	2.923	3.111	3.300	3.488
1999	9							
2000	10	2.215	2.437	2.658	2.880	3.101	3.323	3.544
2001	11							
2002	12	2.097	2.349	2.600	2.852	3.104	3.355	3.607
2003	13							
2004	14	2.007	2.288	2.569	2.850	3.131	3.412	3.693
2005	15							
2006	16	1.962	2.276	2.590	2.904	3.218	3.532	3.846
2007	17							
2008	18	1.921	2.267	2.613	2.958	3.304	3.650	3.996
2009	19							
2010	20	1.898	2.278	2.657	3.037	3.416	3.796	4.176
2011	21							
2012	22	1.879	2.292	2.706	3.119	3.533	3.946	4.359
2013	23							
2014	24	1.868	2.316	2.765	3.213	3.661	4.110	4.558
2015	25							
2016	26	1.864	2.349	2.833	3.318	3.803	4.287	4.772
2017	27							
2018	28	1.864	2.386	2.908	3.430	3.952	4.474	4.996
2019	29							
2020	30	1.865	2.425	2.984	3.544	4.103	4.663	5.222

Table 3

All Vehicle Fleet NOx Emission Rate (g/mi) with Growth
IM240 & ATP I/M Case (19.6 mph)

Calendar Year	Year	Growth Rate						
		0%	1%	2%	3%	4%	5%	6%
1990	0	2.854	2.854	2.854	2.854	2.854	2.854	2.854
1991	1							
1992	2	2.615	2.667	2.720	2.772	2.824	2.877	2.929
1993	3							
1994	4	2.408	2.504	2.601	2.697	2.793	2.890	2.986
1995	5							
1996	6	2.213	2.346	2.479	2.611	2.744	2.877	3.010
1997	7							
1998	8	2.062	2.227	2.392	2.557	2.722	2.887	3.052
1999	9							
2000	10	1.906	2.097	2.287	2.478	2.668	2.859	3.050
2001	11							
2002	12	1.784	1.998	2.212	2.426	2.640	2.854	3.068
2003	13							
2004	14	1.691	1.928	2.164	2.401	2.638	2.875	3.111
2005	15							
2006	16	1.643	1.906	2.169	2.432	2.695	2.957	3.220
2007	17							
2008	18	1.599	1.887	2.175	2.462	2.750	3.038	3.326
2009	19							
2010	20	1.576	1.891	2.206	2.522	2.837	3.152	3.467
2011	21							
2012	22	1.561	1.904	2.248	2.591	2.935	3.278	3.622
2013	23							
2014	24	1.552	1.924	2.297	2.669	3.042	3.414	3.787
2015	25							
2016	26	1.549	1.952	2.354	2.757	3.160	3.563	3.965
2017	27							
2018	28	1.550	1.984	2.418	2.852	3.286	3.720	4.154
2019	29							
2020	30	1.551	2.016	2.482	2.947	3.412	3.878	4.343

Table 4

All Vehicle Fleet NOx Emission Rate (g/mi) with Growth
LEV Stds. with Full IM240 & ATP I/M Case (19.6 mph)

Calendar Year	Year	Growth Rate 0%	1%	2%	3%	4%	5%	6%
1990	0	2.854	2.854	2.854	2.854	2.854	2.854	2.854
1991	1							
1992	2	2.615	2.667	2.720	2.772	2.824	2.877	2.929
1993	3							
1994	4	2.403	2.499	2.595	2.691	2.787	2.884	2.980
1995	5							
1996	6	2.183	2.314	2.445	2.576	2.707	2.838	2.969
1997	7							
1998	8	2.028	2.190	2.352	2.515	2.677	2.839	3.001
1999	9							
2000	10	1.847	2.032	2.216	2.401	2.586	2.771	2.955
2001	11							
2002	12	1.670	1.870	2.071	2.271	2.472	2.672	2.872
2003	13							
2004	14	1.496	1.705	1.915	2.124	2.334	2.543	2.753
2005	15							
2006	16	1.364	1.582	1.800	2.019	2.237	2.455	2.673
2007	17							
2008	18	1.252	1.477	1.703	1.928	2.153	2.379	2.604
2009	19							
2010	20	1.163	1.396	1.628	1.861	2.093	2.326	2.559
2011	21							
2012	22	1.094	1.335	1.575	1.816	2.057	2.297	2.538
2013	23							
2014	24	1.056	1.309	1.563	1.816	2.070	2.323	2.577
2015	25							
2016	26	1.036	1.305	1.575	1.844	2.113	2.383	2.652
2017	27							
2018	28	1.025	1.312	1.599	1.886	2.173	2.460	2.747
2019	29							
2020	30	1.021	1.327	1.634	1.940	2.246	2.553	2.859

Table 5

All Vehicle Fleet NOx Emission Rate (g/mi) with Growth Without I/M Case (27 mph)

Calendar Year	Year	Growth Rate 0%	1%	2%	3%	4%	5%	6%
1990	0	2.968	2.968	2.968	2.968	2.968	2.968	2.968
1991	1							
1992	2	2.801	2.857	2.913	2.969	3.025	3.081	3.137
1993	3							
1994	4	2.670	2.777	2.884	2.990	3.097	3.204	3.311
1995	5							
1996	6	2.522	2.673	2.825	2.976	3.127	3.279	3.430
1997	7							
1998	8	2.401	2.593	2.785	2.977	3.169	3.361	3.553
1999	9							
2000	10	2.255	2.481	2.706	2.932	3.157	3.383	3.608
2001	11							
2002	12	2.133	2.389	2.645	2.901	3.157	3.413	3.669
2003	13							
2004	14	2.043	2.329	2.615	2.901	3.187	3.473	3.759
2005	15							
2006	16	1.997	2.317	2.636	2.956	3.275	3.595	3.914
2007	17							
2008	18	1.955	2.307	2.659	3.011	3.363	3.715	4.066
2009	19							
2010	20	1.933	2.320	2.706	3.093	3.479	3.866	4.253
2011	21							
2012	22	1.913	2.334	2.755	3.176	3.596	4.017	4.438
2013	23							
2014	24	1.902	2.358	2.815	3.271	3.728	4.184	4.641
2015	25							
2016	26	1.897	2.390	2.883	3.377	3.870	4.363	4.856
2017	27							
2018	28	1.897	2.428	2.959	3.490	4.022	4.553	5.084
2019	29							
2020	30	1.897	2.466	3.035	3.604	4.173	4.743	5.312

Table 6

All Vehicle Fleet NOx Emission Rate (g/mi) with Growth Without I/M Case (50 mph)

Calendar Year	Year	Growth Rate 0%	1%	2%	3%	4%	5%	6%
1990	0	3.499	3.499	3.499	3.499	3.499	3.499	3.499
1991	1							
1992	2	3.264	3.329	3.395	3.460	3.525	3.590	3.656
1993	3							
1994	4	3.088	3.212	3.335	3.459	3.582	3.706	3.829
1995	5							
1996	6	2.900	3.074	3.248	3.422	3.596	3.770	3.944
1997	7							
1998	8	2.741	2.960	3.180	3.399	3.618	3.837	4.057
1999	9							
2000	10	2.560	2.816	3.072	3.328	3.584	3.840	4.096
2001	11							
2002	12	2.410	2.699	2.988	3.278	3.567	3.856	4.145
2003	13							
2004	14	2.299	2.621	2.943	3.265	3.586	3.908	4.230
2005	15							
2006	16	2.244	2.603	2.962	3.321	3.680	4.039	4.398
2007	17							
2008	18	2.195	2.590	2.985	3.380	3.775	4.171	4.566
2009	19							
2010	20	2.168	2.602	3.035	3.469	3.902	4.336	4.770
2011	21							
2012	22	2.143	2.614	3.086	3.557	4.029	4.500	4.972
2013	23							
2014	24	2.130	2.641	3.152	3.664	4.175	4.686	5.197
2015	25							
2016	26	2.125	2.678	3.230	3.783	4.335	4.888	5.440
2017	27							
2018	28	2.125	2.720	3.315	3.910	4.505	5.100	5.695
2019	29							
2020	30	2.125	2.763	3.400	4.038	4.675	5.313	5.950

Table 7

NOx Emission Rate
Assumed Linear Growth Factors

Calendar Year	Year	Growth Rate 0%	1%	2%	3%	4%	5%	6%
1990	0	1.000	1.000	1:000	1.000	1.000	1.000	1.000
1991	1							
1992	2	1.000	1.020	1.040	1.060	1.080	1.100	1.120
1993	3							
1994	4	1.000	1.040	1.080	1.120	1.160	1.200	1.240
1995	5							
1996	6	1.000	1.060	1.120	1.180	1.240	1.300	1.360
1997	7							
1998	8	1.000	1.080	1.160	1.240	1.320	1.400	1.480
1999	9							
2000	10	1.000	1.100	1.200	1.300	1.400	1.500	1.600
2001	11							
2002	12	1.000	1.120	1.240	1.360	1.480	1.600	1.720
2003	13							
2004	14	1.000	1.140	1.280	1.420	1.560	1.700	1.840
2005	15							
2006	16	1.000	1.160	1.320	1.480	1.640	1.800	1:960
2007	17							
2008	18	1.000	1.180	1.360	1.540	1.720	1.900	2.080
2009	19							
2010	20	1.000	1.200	1.400	1.600	1.800	2.000	2.200
2011	21							
2012	22	1.000	1.220	1.440	1.660	1.880	2.100	2.320
2013	23							
2014	24	1.000	1.240	1.480	1.720	1.960	2.200	2.440
2015	25							
2016	26	1.000	1.260	1.520	1.780	2.040	2.300	2.560
2017	27							
2018	28	1.000	1.280	1.560	1.840	2.120	2.400	2.680
2019	29							
2020	30	1.000	1.300	1.600	1.900	2.200	2.500	2.800

Appendix C

[Federal Register: June 17, 1994]

DEPARTMENT OF ENERGY
[FRL-4998-6]

Conformity; General Preamble for Exemption From **Nitrogen Oxides** Provisions

AGENCY: Environmental Protection Agency (EPA).

ACTION: General preamble for future proposed rulemakings.

SUMMARY: This General Preamble clarifies how EPA believes that nonclassifiable (i.e., submarginal, transitional, and incomplete/no data) ozone nonattainment areas which are outside the Northeast ozone transport region and have ambient monitoring data demonstrating attainment of the national ambient air quality standard for ozone may be exempted from the conformity rules' **nitrogen oxides** (NO<INF>x) requirements. This notice also references a recent memorandum which states EPA's preliminary interpretation for such ozone nonattainment areas which are classified as marginal or above.

Clarification of EPA policy for areas with monitoring data which demonstrates attainment is particularly important because many areas already have such data and appear to qualify for exemption from the conformity NO<INF>x requirements.

In order to avoid repetition, this General Preamble describes guidance on NOx exemptions with respect to the transportation conformity rule. However, this guidance for transportation conformity is intended to also apply with respect to general conformity.

This General Preamble explains EPA's policy generally for future notice-and-comment rulemakings taking action on requests for NOx exemptions for specific areas. It contains EPA's preliminary interpretations of relevant provisions of the Clean Air Act and the conformity rules. The interpretations contained herein are not binding as a matter of law until final rulemaking action is taken on each specific area. Opportunity for public comment on NOx exemption determinations made by EPA will be provided separately for each area during these individual rulemakings.

FOR FURTHER INFORMATION CONTACT: For issues related to transportation conformity, Kathryn Sargeant, Emission Control Strategies Branch, Emission Planning and Strategies Division, U.S. Environmental Protection Agency, 2565 Plymouth Road, Ann Arbor, MI 48105. (313) 668-4441. For issues related to redesignation, David Cole, (919) 541-5565, and for issues related to general conformity and NOx RACT and NSR, Doug Grano, (919) 541-3292, Ozone/CO Programs Branch (MD-15), Air Quality Management Division, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

SUPPLEMENTARY INFORMATION:

I. Background

A. Transportation Conformity Rule

The transportation conformity final rule, entitled ``Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Funded or Approved Under title 23 U.S.C. or the Federal Transit Act,'' was published in the Federal Register on November 24, 1993 (58 FR 62188). This action was required under section 176(c)(4) of the Clean Air Act, as amended in 1990.

Conformity to an implementation plan is defined in the Clean Air Act as conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards. In addition, Federal activities may not cause or contribute to new violations of air quality standards, exacerbate existing violations, or interfere with timely attainment or required interim emission reductions towards attainment. The transportation conformity final rule establishes the process by which the Federal Highway Administration and the Federal Transit Administration of the United States Department of Transportation and metropolitan planning organizations determine the conformity of highway and transit projects. Under the rule, conformity applies in nonattainment and maintenance areas.

The transportation conformity rule requires ozone nonattainment and maintenance areas to perform a regional emissions analysis of motor vehicle NOx emissions in order to determine the conformity of transportation plans and programs. This analysis must demonstrate that the NO<INF>x emissions which would result from the transportation system if the proposed transportation plan and program were implemented are within the total allowable level of NO<INF>x emissions from highway and transit motor vehicles (``motor vehicle emissions budget''), as identified in a submitted or approved attainment demonstration or maintenance plan.

Until an attainment demonstration or (for nonclassifiable areas) a maintenance plan is approved by EPA, the regional emissions analysis of the transportation system must also satisfy the ``build/no-build test.'' That is, the analysis must demonstrate that emissions from the transportation system if the proposed transportation plan and program were implemented would be less than the emissions from the transportation system if only the previously applicable transportation plan and program were implemented. Furthermore, the regional emissions analysis must show that emissions from the transportation system if the transportation plan and program were implemented would be lower than 1990 levels by any nonzero amount.

The transportation conformity rule as currently written provides for an exemption from these requirements with respect to NO<INF>x if the Administrator determines under section 182(f) of the Clean Air Act that additional reductions of NO<INF>x would not contribute to attainment. This exemption is explicitly referred to and is described in similar language in Sec. 51.394(b)(3)(i) (the ``Applicability'' section of the rule) and in the preamble (58 FR 62197, November 24, 1993). The language is repeated in the provisions of the rule regarding the motor vehicle emissions budget test (Sec. 51.428(a)(1)(ii)) and the ``build/no-build'' test (Secs. 51.436(e), 51.438(e)), although Clean Air Act section 182(f) is not specifically mentioned.

Section 182(f) of the Clean Air Act contains requirements for--and in some cases, exemptions for--major stationary NO<INF>x sources in marginal and above ozone nonattainment areas and in an ozone transport region. EPA guidance for application of section 182(f) in these areas is briefly described and referenced in the next section of this preamble. Because the transportation conformity rule covers all nonattainment areas--including nonclassifiable ozone nonattainment

areas (i.e., submarginal, transitional, incomplete/no data areas) that are not necessarily covered under section 182(f)--corresponding guidance is needed for applying in these nonclassifiable ozone nonattainment areas the section 182(f) NO<INF>x exemption referenced in the transportation conformity rule. This guidance is described below (section II, ``EPA Policy'') and is consistent with the existing guidance that applies to the marginal and above areas outside an ozone transport region. The substantive test for a NO<INF>x exemption is the same in both sets of areas, but in nonclassifiable ozone nonattainment areas the effect of a NO<INF>x exemption is limited solely to the issue of whether such areas may be exempted from meeting the NO<INF>x requirements of the transportation conformity rule.

B. General Conformity

On November 30, 1993 (58 FR 63214), EPA published the general conformity final rule, entitled ``Determining Conformity of General Federal Actions to State or Federal Implementation Plans.'' This action was required under section 176(c)(4) of the Clean Air Act, as amended in 1990.

Like the transportation conformity rule, the general conformity rule exempts an area from considering NO<INF>x emissions if the area has been exempted under section 182(f) of the Clean Air Act (see definition of ``precursors of a criteria pollutant,'' 58 FR 63248).

In order to avoid repetition, this General Preamble describes guidance on NO<INF>x exemptions with respect to the transportation conformity rule. However, this guidance for transportation conformity is intended to also apply with respect to general conformity.

C. Section 182(f) of the Clean Air Act

Section 182(f) of the Clean Air Act requires states to apply the reasonably available control technology (RACT) and new source review (NSR) requirements that apply to major stationary sources of volatile organic compounds to major stationary sources of NO<INF>x as well. NO<INF>X RACT is required in moderate and above ozone areas, as well as in all areas within an ozone transport region. NO<INF>X NSR regulations are required in marginal and above ozone areas, as well as in all areas within an ozone transport region.

Clean Air Act section 182(f)(1)(A) states that, for nonattainment areas not within an ozone transport region (as established under Clean Air Act section 184), these NO<INF>X requirements shall not apply if the Administrator determines that additional reductions of NO<INF>X would not contribute to attainment of the national ambient air quality standard (NAAQS) for ozone in the area. Furthermore, for areas within an ozone transport region, section 182(f)(1)(B) states that these stationary source NO<INF>X requirements shall not apply if additional NO<INF>X reductions would not produce net ozone air quality benefits in the region.

EPA issued limited guidance on section 182(f) exemptions in a September 17, 1993 memo from Michael H. Shapiro, Acting Assistant Administrator for Air and Radiation, to the Regional Air Division Directors entitled, ``State Implementation Plan (SIP) Requirements for Areas Submitting Requests for Redesignation to Attainment of the Ozone and Carbon Monoxide (CO) National Ambient Air Quality Standards (NAAQS) on or after November 15, 1992.'' EPA issued more extensive guidance in a December 1993 document entitled, ``Guideline for Determining the Applicability of **Nitrogen** Oxide Requirements under section 182(f).'' Most recently, EPA has clarified and, in part, revised its guidance in a May 27, 1994 memorandum from John S. Seitz, Director of the Office of Air Quality Planning and Standards, to Regional Air Division Directors,

``Section 182(f) NO<INF>X Exemptions--Revised Process and Criteria.'' All of these guidance documents are available by request from the contacts listed above.

Taken together, these guidance documents state that if an area (not within an ozone transport region) has attained the ozone standard, as demonstrated by adequate monitoring data consistent with EPA guidance, it is clear that additional NO<INF>X reductions would not contribute to attainment. Therefore, such an area would meet the test under section 182(f)(1)(A) for an exemption from NO<INF>X NSR and RACT requirements.

II. EPA Policy

A. Transportation Conformity and Section 182(f) Exemptions

The transportation conformity rule states that its NO<INF>X provisions do not apply when the Administrator has determined under section 182(f) of the Clean Air Act that ``additional reductions of NO<INF>X would not contribute to attainment.'' Although two other passages of the transportation conformity rule use this language (which is borrowed from section 182(f)(1)(A)'s test for areas outside an ozone transport region) without specifically referring to section 182(f), EPA believes there is no appropriate basis to interpret this identical language differently under the transportation conformity rule than under the Clean Air Act. Consequently, EPA believes this common language should be interpreted similarly for purposes of both section 182(f) and conformity NO<INF>X exemptions. Therefore, EPA is providing guidance which would exempt nonclassifiable ozone nonattainment areas outside an ozone transport region from the conformity rule's NO<INF>X provisions on the same substantive basis as the applicable section 182(f) test.<SUP>1

\1\ As explained in footnote 6 of the May 27, 1994 memorandum from John Seitz, referenced above, for purposes of the NO<INF>X exemption test, EPA is interpreting the term ``contribute to attainment'' to mean that the State (or petitioner) need only show whether additional NO<INF>X reductions would contribute to attainment, not whether such reductions would contribute to attainment and maintenance. EPA believes that Congress could reasonably have believed it appropriate to require that States impose reasonably available control technology (RACT) and new source review (NSR) requirements on NO<INF>X sources for areas in nonattainment, but that the States could be left to decide for themselves whether to impose these NO<INF>X controls or other measures for maintenance purposes, even if these controls could ``contribute'' to maintenance. EPA believes this rationale also applies in the conformity context, where EPA believes it is reasonable to allow States that have attained the NAAQS to decide for themselves how best to ensure maintenance of the standard. And, as explained below, EPA has conditioned the monitoring-based section 182(f) and conformity exemptions on continued monitoring data that do not show violations of the NAAQS. This will provide an additional incentive for States to track NO<INF>X emissions (and limit such emissions, where necessary) to ensure that future violations do not occur.

EPA notes that its conclusion regarding the relevance of maintenance may well be different for other Clean Air Act provisions where the test is whether emissions reduction measures are ``necessary'' for attainment, even if maintenance is not explicitly mentioned. See section 211(c)(4)(C) (allowing States to overcome federal preemption of State fuel controls where ``necessary'' to

achieve a NAAQS) and section 184(c) (providing for EPA approval of ozone transport commission recommendations of additional control measures ``necessary'' to bring any area in the region into attainment). It may make less sense to disregard maintenance to disallow more stringent fuel controls under section 211 or to disapprove additional controls under section 184 where these measures not only contribute to but are ``necessary'' for maintenance. The rationale that the State might appropriately retain discretion to choose other options to ensure maintenance makes less sense when the specific measures in question are ``necessary.''

The transportation conformity rule applies to all nonattainment and maintenance areas, and does not distinguish between nonclassifiable nonattainment and other nonattainment areas. Consequently, EPA interprets the transportation conformity rule's reference to the need for nonattainment areas to obtain a section 182(f) exemption in order to be relieved of the NO<INF>X conformity requirements to include nonclassifiable ozone nonattainment areas (i.e., submarginal, transitional, incomplete/no data areas), even though such areas are not subject to Clean Air Act section 182(f) itself. This means that ozone nonattainment areas, including nonclassifiable ozone nonattainment areas, can only be exempted from the NO<INF>X provisions of the transportation conformity rule if EPA determines that the area satisfies the substantive test required for an areawide section 182(f) exemption, through a process similar to that required for section 182(f) exemptions which are not related to conformity.

Thus, for nonclassifiable ozone nonattainment areas outside the Northeast ozone transport region, EPA will consider requests for determinations that additional NO<INF>X reductions would not contribute to attainment if such areas already have air quality data that demonstrate attainment of the ozone standard, that are consistent with 40 CFR part 58 requirements, and that are recorded in EPA's Aerometric Information Retrieval System (AIRS). Once made, this determination would relieve an area of the transportation conformity rule's NO<INF>X provisions. A more thorough explanation of the conditions and process for obtaining the 182(f) exemption is given in the May 27, 1994 Seitz memorandum.

B. Condition on NO<INF>X Exemptions for Areas Outside the Ozone Transport Region With Monitoring Data Demonstrating Attainment

If a NO<INF>X transportation conformity exemption request is based solely on monitoring data demonstrating attainment, EPA's approval of the exemption, if otherwise warranted, will be granted on a contingent basis, i.e., the exemption would last for only as long as the area's monitoring data continues to demonstrate attainment. If subsequently it is determined that the area has violated the standard, the exemption, as of the date of the determination, would no longer apply. EPA would notify the state that the exemption no longer applies, and would also provide notice to the public in the Federal Register. Existing transportation plans and TIPs and past conformity determinations will not be affected by a determination that the NO<INF>X exemption no longer applies, but new conformity determinations would have to observe the NO<INF>X requirements of the conformity rule. The State must continue to operate an appropriate air quality monitoring network, in accordance with 40 CFR part 58, to verify the attainment status of the area. The air quality data relied on for the above determinations must be consistent with 40 CFR part 58 requirements and other relevant EPA guidance and recorded in EPA's Aorometric Information Retrieval System (AIRS).

C. Areas Inside an Ozone Transport Region

Section 182(f) of the Clean Air Act provides a different test for exempting areas in an ozone transport region from NO<INF>X requirements (see section I.C. of this preamble). In particular, that test requires a demonstration that shows additional NO<INF>X reductions would not produce net ozone benefits in the transport region as a whole. Since the requirement for meeting this test is substantially different from that needed to meet the contribute-to-attainment test in section 182(f)(1)(A), and since the language in the conformity rule clearly does not reflect the language of the test provided for areas in an ozone transport region, the determination of how such areas would qualify for an exemption from the rule's NO<INF>X requirements merits more consideration before EPA can issue appropriate guidance. Today's guidance therefore applies only to NO<INF>X exemptions for areas outside the Ozone Transport Region.

As noted previously, requests for conformity NO<INF>X exemptions must consider the nonattainment area as a whole. With respect to transportation conformity, NO<INF>X exemptions will not be granted for portions of nonattainment areas. Therefore, nonattainment areas with portions both inside and outside the Ozone Transport Region will be treated for purposes of such exemption requests as areas inside the Ozone Transport Region, and for the present time, will not be eligible for an exemption based on monitoring data as described in this notice.

EPA will give further consideration to areas in the Ozone Transport Region, and if EPA does propose to exempt some of these areas, they will be addressed in state-specific rulemaking notices unless another general preamble providing guidance for such areas is published first.

III. Process for Receiving a NO<INF>X Exemption Based on Monitoring Data for Nonclassifiable Areas

EPA believes that section 182(f) sets up two separate procedures by which EPA may act on NO<INF>X exemption requests. Subsections 182(f)(1) and (2) direct that action on NO<INF>X exemption determination requests should take place ``when [EPA] approves a plan or plan revision.'' This language appears to contemplate that exemption requests submitted under these paragraphs are limited to states, since states are the entities authorized under the Act to submit plans or plan revisions. By contrast, subsection 182(f)(3) provides that ``person[s]<SUP>2'' may petition for a NO<INF>X determination ``at any time'' after the ozone precursor study required under section 185B of the Act is finalized,\3\ and gives EPA a limit of six months after filing to grant or deny such petitions. Although subsection 182(f)(3) references section 182(f)(1), EPA believes that paragraph (f)(3)'s reference to paragraph (f)(1) encompasses only the substantive tests in paragraph (f)(1) (and, by extension, paragraph (f)(2)), not the requirement in paragraph (f)(1) for EPA to grant exemptions only when acting on plan revisions.

\2\Section 302(e) of the Act defines the term ``person'' to include states.

\3\The final section 185B report was issued July 30, 1993.

Accordingly, petitions submitted under subsection 182(f)(3) are not required to be submitted as state implementation plan (SIP) revisions. Consequently, the state is not required under the Act to hold a public hearing in order to petition for an areawide NO<INF>X exemption

determination under section 182(f)(3) (see Clean Air Act sections 110(a) (1) and (2)). For similar reasons, if the state is submitting an areawide petition under subsection 182(f)(3), it is unnecessary to have the Governor submit the petition. However, because of the need for consistency with the AIRS data and the requirements of 40 CFR part 58, EPA believes that, particularly in cases where the NO<INF>X exemption request (including a request for exemption from the NO<INF>X requirements of the conformity rules) is based on monitoring data, if such data is contained in a petition submitted by a person other than the state, the petition should be coordinated with the state air agency. Lack of endorsement by the state air agency will require more scrutiny by EPA, and therefore EPA's processing of the petition will likely take more time.

EPA will grant or deny a petition for an areawide NO<INF>X transportation conformity exemption through a full rulemaking process. This may involve a direct final rule or a notice of proposed rulemaking followed by a final rule. Either process allows opportunity for public comment. For areas which are relying on monitoring data which demonstrates attainment, the notice and comment will provide opportunity for comment on the preliminary interpretations contained in this General Preamble. These rulemakings will also offer opportunity for comment on the appropriateness of using monitoring data which is consistent with the requirements in 40 CFR part 58 and consistent with the data recorded in AIRS as the basis of EPA's approval and rescission of the contingent NO<INF>X exemption. If EPA issues a final rulemaking concluding that it will use such air quality monitoring data in making subsequent determination that an area has violated the standard, no further notice and comment will be required in order to rescind the NO<INF>X exemption in the event that such data subsequently indicates that a violation has occurred.

EPA is preparing a delegation of authority to Regional Administrators to make determinations under section 182(f) for areas which are outside the Ozone Transport Region and which have three years of monitoring data demonstrating attainment. This delegation would allow the rulemaking for 182(f) determinations to be conducted by EPA's regional offices.

IV. Effect of a NO<INF>X Transportation Conformity Exemption on Transportation Planning

This section applies to both classified and nonclassifiable areas.

Once EPA makes a finding under a separate notice which grants a NO<INF>X transportation conformity exemption, an area is relieved of the transportation conformity rule's requirements for regional analysis of NO<INF>X emissions.

However, EPA plans to amend the transportation conformity rule to require that once an area's maintenance plan is approved, any previously approved NO<INF>X conformity exemption no longer applies. The area must then demonstrate as part of its conformity determinations that the transportation plan and TIP are consistent with the motor vehicle emissions budget for NO<INF>X where such a budget is established by the maintenance plan. As currently written, none of the transportation conformity rule's NO<INF>X requirements would ever apply to an area once such an area had received a NO<INF>X transportation conformity exemption.

EPA believes that it is crucial for maintenance areas to demonstrate consistency with the maintenance plan's motor vehicle NO<INF>X emissions budget because that budget represents the level of motor vehicle NO<INF>X emissions needed for continued maintenance. However, the maintenance plan's NO<INF>X motor vehicle emissions budget for the purposes of transportation conformity will not necessarily

require annual NO<INF>X emission reductions throughout the ten-year period.

EPA intends to promptly amend the conformity rule as stated above, so that NO<INF>X motor vehicle emissions budgets in maintenance plans will begin to apply at the time or shortly after those plans are approved.

V. Administrative Requirements

Regulatory Flexibility Act

Whenever EPA is required by section 553 of the Administrative Procedures Act or any other law to publish general notice and proposed rulemaking for any proposed rule, EPA shall propose and make available for public comment an initial regulatory flexibility analysis.

The regulatory flexibility requirements do not apply for this General Preamble because it is not a regulatory action in the context of the Administrative Procedures Act or the Regulatory Flexibility Act.

Dated: June 8, 1994.
Carol M. Browner,
Administrator.
[FR Doc. 94-14416 Filed 6-16-94; 8:45 am]
BILLING CODE 6560-50-P

Appendix D

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

MAY 27 1994

MEMORANDUM

SUBJECT: Section 182(f) Nitrogen Oxides (NO_x) Exemptions--Revised Process and Criteria

FROM: John S. Seitz, Director
Office of Air Quality Planning and Standards (MD-10)

TO: Director, Air, Pesticides and Toxics Management Division, Regions I and IV
Director, Air & Waste Management Division, Region II
Director, Air, Radiation and Toxics Division, Region III
Director, Air & Radiation Division, Region V
Director, Air, Pesticides and Toxics Division, Region VI
Director, Air & Toxics Division, Regions VII, VIII, IX, and X

This memorandum revises the process the Environmental Protection Agency (EPA) currently intends to follow for granting exemptions from control requirements for NO_x under section 182(f) of the Clean Air Act (Act).[1] It also revises certain guidance previously issued concerning NO_x exemptions for areas outside the ozone transport region that have air quality monitoring data showing attainment.[2]

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[1]"Guideline for Determining the Applicability of Nitrogen Oxide Requirements under Section 182(f)," from John S. Seitz, Director, Office of Air Quality Planning and Standards, to the Regional Division Directors, December 16, 1993, Chapter 2, Administrative Procedures.

[2]"State Implementation Plan (SIP) Requirements for Areas Submitting Requests for Redesignation to Attainment of the Ozone and Carbon Monoxide (CO) National Ambient Air Quality Standards (NAAQS) on or after November 15, 1992," from Michael H. Shapiro, Acting Assistant Administrator for Air and Radiation, to the Regional Division Directors, September 17, 1993 [NO_x reasonably available control technology (RACT) discussion on pages 4-5] and December 1993 guideline at section 4.4.

The guidance in this memorandum applies to marginal and above ozone nonattainment areas because the section 182(f) exemption is directed at major NO_x stationary sources only in marginal and above ozone nonattainment areas. The guidance does not address nonclassifiable ozone nonattainment areas (i.e., transitional, submarginal, or incomplete/no data areas). However, the EPA's conformity rules[3,4] also reference the section 182(f) exemption process as a means for exempting affected areas from NO_x conformity requirements.[5] Moreover, under these rules, conformity applies in all nonattainment and maintenance areas, including the nonclassifiable nonattainment areas. Therefore, corresponding guidance is needed for the application of the section 182(f) NO_x exemption referenced in the conformity rules in these nonclassifiable areas. The guidance document entitled "Conformity; General Preamble for Exemption from Nitrogen Oxides Provisions," to be published in the Federal Register, addresses how EPA generally intends to act on requests for NO_x conformity exemption determinations for those areas, and should be consulted for those purposes along with this guidance.

Ozone nonattainment areas that are granted areawide section 182(f) exemptions under the approach described in this memorandum will also be exempt from the NO_x conformity requirements. However, since the conformity requirements apply on an areawide basis, a section 182(f) exemption for an individual source (or group of sources) within the nonattainment or maintenance area would not provide a sufficient basis to exempt the entire

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[3]"Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Funded or Approved under Title 23 U.S.C. of the Federal Transit Act," November 24, 1993 (58 FR 62188).

[4]"Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule," November 30, 1993 (58 FR 63214).

[5]The section 182(f) exemption is explicitly referred to and is described in similar language in 40 CFR 51.394(b)(3)(i), the "Applicability" section of the transportation conformity rule, and in the preamble (see 58 FR 62197, November 24, 1993). The language is repeated in the provisions of the rule regarding the motor vehicle emissions budget test [section 51.428(a)(1)(ii)] and the "build/no-build" test [sections 51.436(e), 51.438(e)], although section 182(f) of the Act is not specifically mentioned. In the general conformity rule, the section 182(f) NOx exemption is referred to in section 51.852 (definition of "Precursors of a criteria pollutant") and is discussed in the preamble (see 58 FR 63240, November 30, 1993).

nonattainment or maintenance area from the NO_x conformity requirements.

Section 182(f) requires States to apply the same requirements to major stationary sources of NO_x as are applied to major stationary sources of volatile organic compounds. The requirements are RACT and new source review (NSR). The NO_x RACT is required in ozone nonattainment areas classified as moderate and above, as well as in all areas within an ozone transport region. The NSR rules are required in ozone nonattainment areas classified as marginal and above, as well as all areas within an ozone transport region. Section 182(f) also specifies circumstances under which the new NO_x requirements would be limited or would not apply.

Under section 182(f)(1)(A), an exemption from the NO_x requirements may be granted for nonattainment areas outside an ozone transport region if EPA determines that "additional reductions of [NOx] would not contribute to attainment" of the ozone NAAQS in those areas. The EPA has indicated that in cases where a nonattainment area is demonstrating attainment with 3 consecutive years of air quality monitoring data, without having implemented the section 182(f) NO_x provisions, it is clear that this test is met since "additional reductions of [NOx] would not contribute to attainment" of the NAAQS in that area. Under this revised guidance, a State may submit a petition for a section 182(f) exemption based on air quality monitoring data showing attainment of the ozone NAAQS without also having to submit a redesignation request or a maintenance plan with that petition.[6,7] The EPA's approval of the exemption, if warranted, would be granted on a contingent basis (i.e., the exemption would last for only as long as the area's monitoring data continue to demonstrate attainment).

If it is subsequently determined by EPA that the area has violated the standard, the section 182(f) exemption, as of the date of the determination, would no longer apply. The EPA would

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[6]For purposes of the NOx exemption test in section 182(f)(1)(A) for areas outside an ozone transport region, EPA is interpreting the term "contribute to attainment" to mean that the State (or petitioner) need only show whether additional reductions of NOx would contribute to attainment of the ozone NAAQS, and not whether such reductions would contribute to attainment and maintenance.

[7]The section 182(f) exemption does not affect EPA's requirements for maintenance plans; the maintenance plan required for redesignation must still address NO_x in accordance with EPA guidance.

notify the State that the exemption no longer applies, and would also provide notice to the public in the Federal Register. A determination that the NO_x exemption no longer applies would mean that the area would thereafter have to address any NO_x NSR or NO_x RACT requirements that may be applicable under section 182(f). Similarly, while existing transportation plans, transportation improvement plans and past conformity determinations would not be affected by a determination that the exemption no longer applies, new conformity determinations would have to observe the NO_x requirements of the conformity rule. The State must continue to operate an appropriate air quality monitoring network, in accordance with 40 CFR part 58, to verify the attainment status of the area. The air quality data relied on for the above determinations must be consistent with 40 CFR part 58 requirements and other relevant EPA guidance and recorded in EPA's Aerometric Information Retrieval System (AIRS).

Section 182(f) contains very few details regarding the administrative procedure for acting on NO_x exemption requests. The absence of specific guidelines by Congress leaves EPA with discretion to establish reasonable procedures, consistent with the requirements of the Administrative Procedure Act (APA).

The EPA believes that section 182(f) sets up two separate procedures by which the Agency may act on NO_x exemption requests. Section 182(f)(1) and (2) direct that action on NO_x exemption determination requests should take place "when [EPA] approves a plan or plan revision." This language appears to contemplate that exemption requests submitted under these paragraphs are limited to States, since States are the entities authorized under the Act to submit plans or plan revisions. By contrast, section 182(f)(3) provides that "person[s]"[8] may petition for a NO_x determination "at any time" after the ozone precursor study required under section 185B of the Act is finalized,[9] and gives EPA a limit of 6 months after filing to grant or deny such petitions. Although section 182(f)(3) references 182(f)(1), there are certain key differences in the language. First, individuals may submit petitions under paragraph (3) "at any time" (i.e., even when there is no plan revision from the State pending at EPA). Second, the specific timeframe for EPA action established in paragraph (3) is substantially shorter than the timeframe usually required for States to develop and for EPA to take action on revisions to a SIP. These differences strongly suggest that Congress intended the process for acting on personal petitions to be distinct--and more expeditious--from the plan-

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[8]Section 302(e) of the Act defines the term "person" to include States.

[9]The final section 185B report was issued July 30, 1993.

revision process intended under paragraph (1). Thus, EPA believes that paragraph (3)'s reference to paragraph (1) encompasses only the substantive tests in paragraph (1) [and, by extension, paragraph (2)], not the requirement in paragraph (1) for EPA to grant exemptions only when acting on plan revisions.

The requirements of the APA apply with respect to the type of notice which must be provided regarding EPA action on NO_x exemption determinations. Notice-and-comment rulemaking is required by the APA when EPA action involves not just factual, but also policy and legal considerations that will apply as a general matter and, thus, is legislative in nature. Conversely, when EPA action can properly be described as party specific in nature, involving consideration of primarily factual evidence, notice-and-comment rulemaking is not required by the APA. In such a case, the EPA action could consist of the issuance of an order [see 5 U.S.C. sections 551(4)-(7) and 553]. Given these requirements of the APA, EPA believes that under either of the procedures established in section 182(f), where the request is for an entire area to be exempted from the NO_x requirements, the EPA must go through notice-and-comment rulemaking to grant or deny the petition. Where a petition is submitted for an exemption determination relating to an individual source (or group of sources) under subsection 182(f)(3), EPA may grant or deny the petition through an order transmitted by letter to the affected source (or sources). The EPA will also provide the public with notice in the Federal Register of the receipt and availability of the petition, as well as of the EPA's final determination.

Attachment I of this memorandum is the step-by-step administrative procedure for processing areawide petitions. Attachment II is the procedure for processing petitions relating to an individual source (or group of sources).

Section 182(f)(3) requires that EPA grant or deny a petition, whether areawide or source specific, within 6 months after its filing. Where the rulemaking process is followed (for areawide petitions), EPA is aware that the 6-month requirement may be infeasible in some cases. However, courts have ruled that even in instances, such as the one presented here, where a prescribed timeframe for EPA action apparently conflicts with the requirement to provide the public with adequate opportunity for notice and comment, the notice requirement must be met. Therefore, EPA will process areawide exemption requests by

rulemaking as expeditiously as practicable, with the intent of meeting the 6-month deadline.

As noted earlier, petitions submitted under section 182(f)(3) are not required to be submitted as SIP revisions. Consequently, the State is not required under the Act to hold a public hearing in order to petition for an areawide NO_x exemption determination [see section 110(a)(1) and (2)]. For similar reasons, if the State is submitting an areawide petition under subsection 182(f)(3), it is unnecessary to have the Governor submit the petition. However, because of the need for consistency with the AIRS data and the requirements of 40 CFR part 58, EPA believes that, particularly in cases where the NO_x exemption request (including a request for exemption from the NO_x requirements of the conformity rules) is based on monitoring data, if such data are contained in a petition submitted by a person other than the State, the petition should be coordinated with the State air agency.

The Federal Register notice of EPA approval or disapproval of a State's petition must be signed by the Administrator. This is not a SIP action or a redesignation action. Consequently, this action is not delegated and must undergo Headquarters review. If some or all types of petition actions become delegated, notification will be provided.

Where there is a conflict, this guidance supersedes guidance contained in EPA's September 17, 1993 memorandum and in sections 2.2 and 4.4 of EPA's December 16, 1993 document. Please contact Doug Grano (919) 541-3292 or Kimber Scavo (919) 541-3354 regarding any questions.

Attachments

cc: Tom Helms
Steve Hitte
Robert Kellam
Phil Lorang
Rich Ossias
Joe Tikvart
Lydia Wegman

bcc: David Cole
Ned Meyer
Carla Oldham
Kathryn Sargeant
John Silvasi
Doug Grano
Annie Nikbakht
Mike Prosper
Kimber Scavo

OAQPS:AQMD:OCMPB:KIMBER SCAVO:JKING:EXT. 3354
DISK: SCAVO.JK FILE: PROCESS. NOX

Attachment I
(Rulemaking for Areawide Petition)[1]

(1) The petition is sent to the appropriate Regional Offices (RO's) and States by the petitioner.

(2) The RO sends copies of the petition to Headquarters (HQ) Offices for technical and legal review. These offices are: Ozone/Carbon Monoxide Programs Branch, AQMD (Doug Grano); Source Receptor Analysis Branch, TSD (Ned Meyer); Office of Mobile Sources (Kathryn Sargeant); and Office of General Counsel (Mike Prosper). *(The petition should be sent immediately upon receipt.)*

(3) The RO evaluates the demonstration and makes the initial determination as to whether the petition should be granted or denied along with the supporting rationale. The RO should consult with the above HQ Offices and affected States.

(4) The RO prepares a Federal Register (FR) notice for the Administrator's signature that proposes to grant or deny the petition. A notice that proposes to grant an exemption on a contingent basis (for areas outside the ozone transport region that have air quality monitoring data showing attainment) must also propose that the exemption would no longer apply if EPA subsequently determines that a violation of the ozone standard has occurred. That proposal must specify that the NO_x requirements of the conformity rules would apply to new conformity determinations, and the amount of time the State would have to submit any applicable section 182(f) NO_x NSR and/or RACT rules in the event that EPA determines at some future time that a violation occurred.

The evaluation under step 3 above must be included in either the FR notice or a technical support document that is included in the docket. *(The RO should prepare and complete the FR proposal within 2 months after receipt, taking into account any HQ comments on the petition or the RO evaluation.)*[2]

(5) The FR proposal is sent to HQ reviewers for concurrence. *(HQ should finish the review within 1 month after receipt.)*

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[1]This process assumes no delegation to the Regional Administrator.

[2]Petitions that are based on an area having data indicating that it has already attained the ozone standard should generally be processed in less time.

(6) After any revision and concurrence by HQ reviewers, the FR proposal is sent to the Administrator for signature and is then published. *(There should be at least 1 month for a formal comment period after FR publication.)*

(7) The RO prepares a FR notice of final rulemaking that addresses comments received and takes final action to grant (fully or on a contingent basis) or to deny the petition. The RO sends the notice to the HQ reviewers noted above under Step 2. *(HQ should finish the review within 1 month after receipt.)*

(8) After any revision and concurrence by HQ reviewers, the FR final notice is sent to the Administrator for signature and is then published.

Attachment II[1]

[Letter of Approval/Denial for Individual Source (or Group of Sources) Petition]

(1) The petition is sent to the affected States and RO's by the petitioner.

(2) The RO prepares a FR notice of availability and sends it directly to the FR after Regional Administrator signature. This notice does not indicate EPA's intended action. The EPA notice should solicit comments. However, because the action is not a rulemaking, there is no obligation on EPA's part to respond to the comments when taking final action. The EPA provides affected States a 3-month period to make a recommendation to EPA.

(3) The RO sends a copy of the petition to the HQ Offices listed in Attachment I, Step 2.

(4) The RO makes the initial determination as to whether the petition should be granted or denied in consultation with affected States. The determination is incorporated by the RO into a letter for signature of the Administrator, along with the supporting rationale.

(5) The draft letter is sent to HQ reviewers for concurrence.

(6) After concurrence by HQ reviewers, the final letter is prepared by the RO and sent to the Administrator for signature ("cc" to the affected States).

(7) The RO prepares a second FR notice that includes the letter signed by the Administrator to the petitioner and sends the notice directly to the FR after Regional Administrator signature.

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[1]This process assumes no delegation to the Regional Administrator.

Appendix E

AREAS THAT HAVE APPLIED FOR NOx CONFORMITY WAIVERS

The following areas have applied for NOx conformity waivers based on three years of clean data showing no violations of the ozone standard:

Alabama	o Birmingham
California	o Monterey o San Francisco
Colorado	o Denver
Kentucky	o Ashland
Louisiana	o Beauregard Parish o Grant Parish o Lafayette o Lafourche Parish o New Orleans o St. James Parish o St. Mary Parish
Michigan	o Detroit o Flint o Lansing
Ohio	o Canton o Clinton County o Columbus o Dayton o Preble County o Steubenville o Toledo o Youngstown
North Carolina	o Charlotte
Texas	o Victoria
West Virgina	o Charleston o Greenbrier o Huntington o Parkersburg

Areas that have applied for NOx conformity waivers based on photochemical modelling showing that additional reductions in NOx will not contribute to attainment of the ozone standard:

Arizona	**o Phoenix**
Great Lakes States (IL, IN, MI, & WI)	**o LADCO nonattainment areas**
Texas	**o Beaumont** **o Dallas-Fort Worth** **o Houston** **o El Paso**

*** As of August, 1995, the following areas have been issued NOx waivers:** *Dallas-Ft. Worth, El Paso, Toledo, Ashland, the Louisiana areas, Victoria, Detroit, Monterey, San Francisco, Houston, Beaumont, Phoenix, Lansing, and Flint.*